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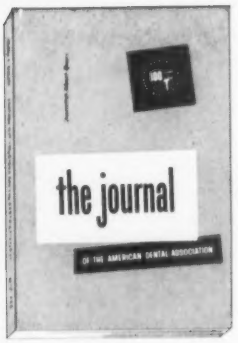
OF THE AMERICAN DENTAL ASSOCIATION



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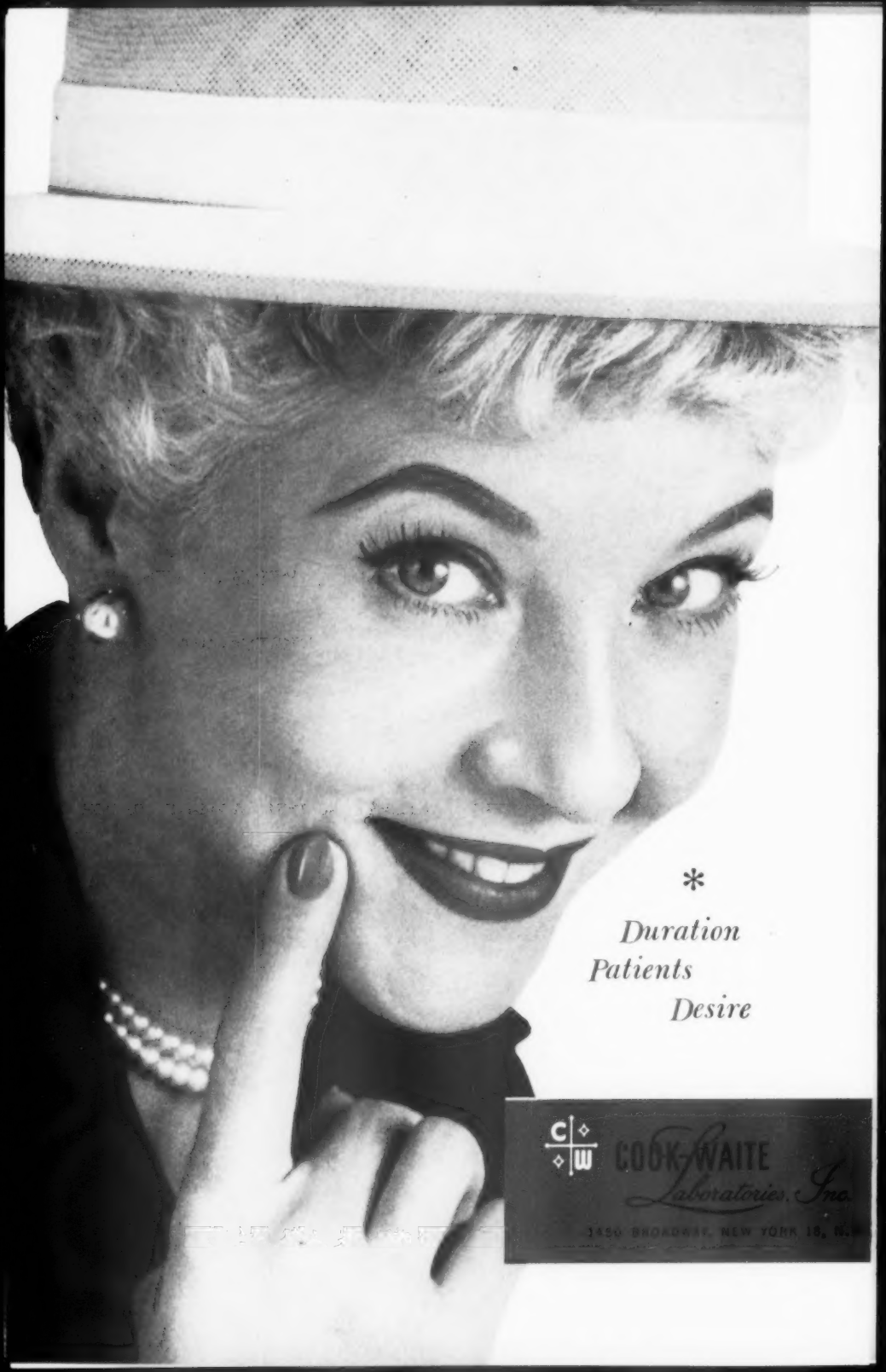
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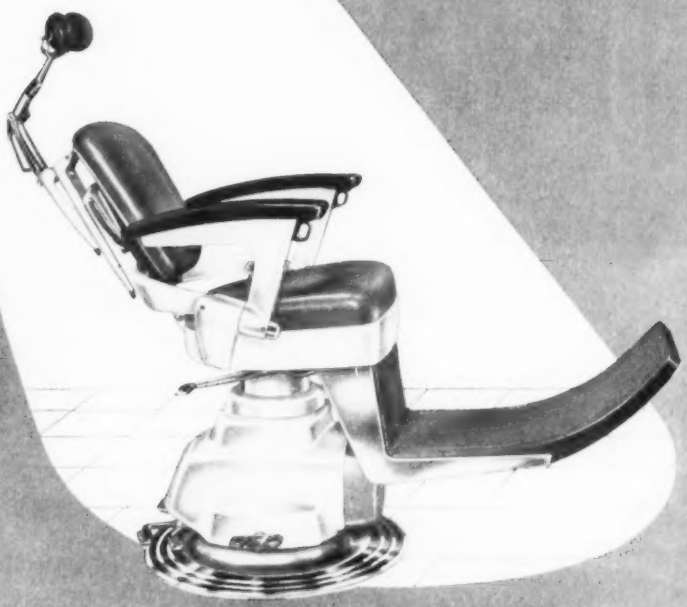

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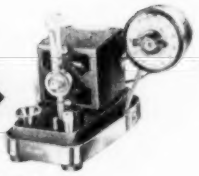

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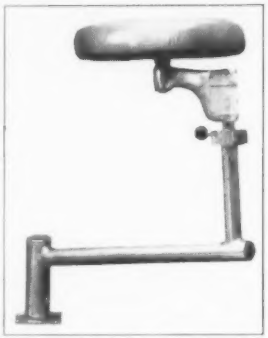

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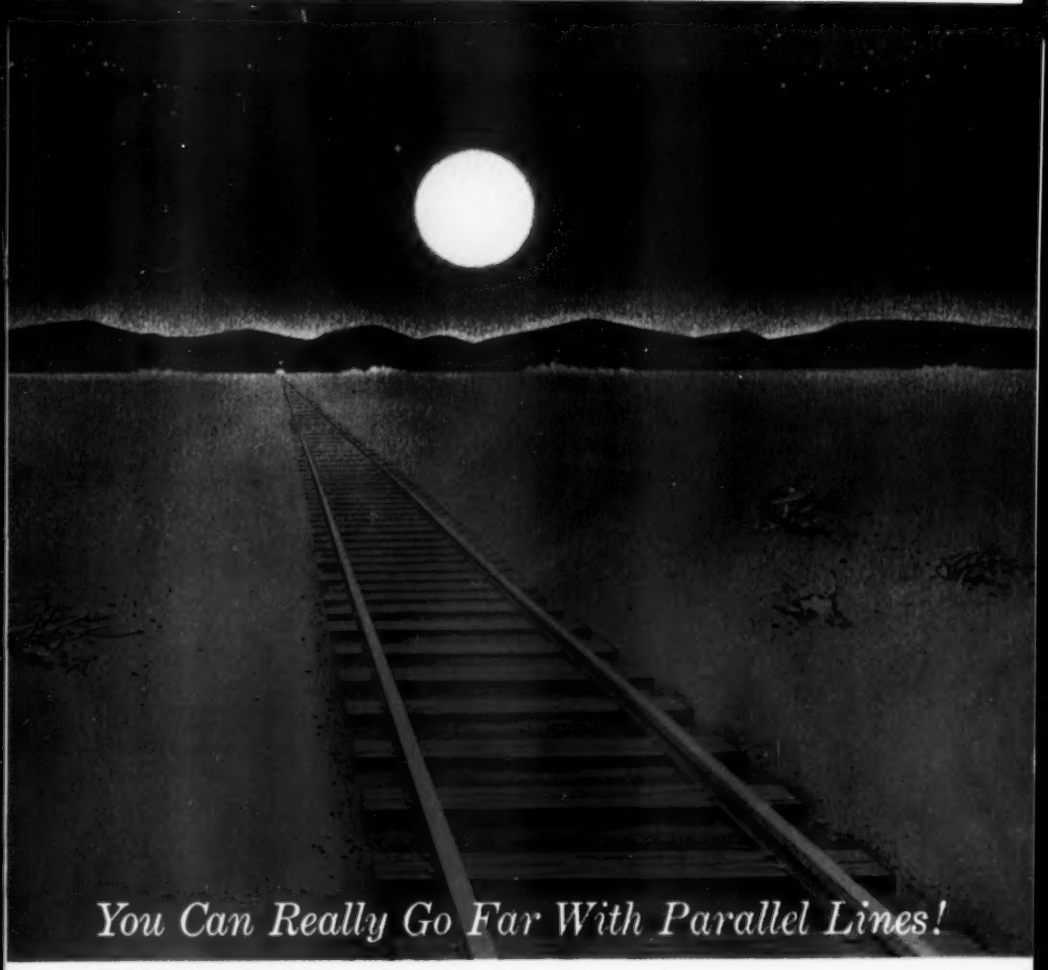

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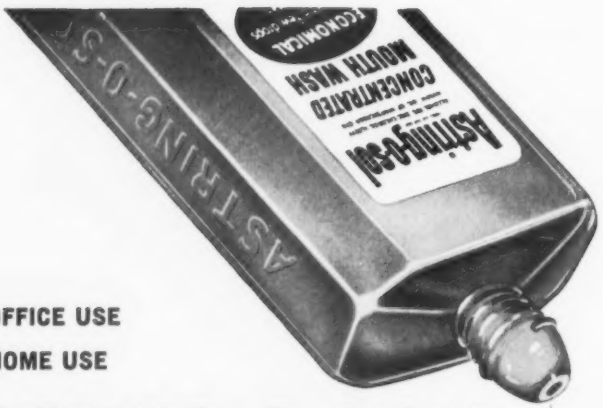

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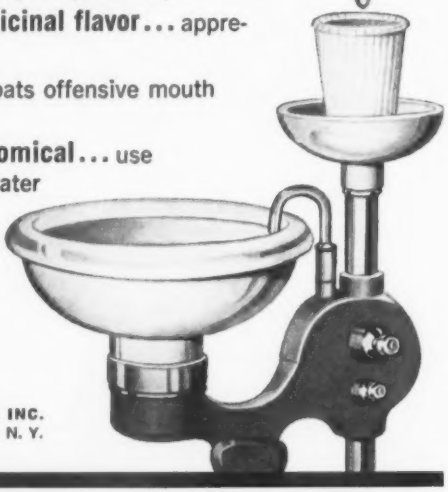

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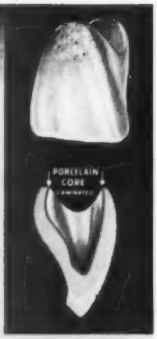

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Review of 1958 dental research

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1. *Developments in anesthesiology*
2. *New and useful drugs*
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4. *Pedodontics*
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The Council on Dental Research is pleased to present research reviews for 1958. The many letters received during the past year expressing favorable comments about the review articles and the idea of making such material available is greatly appreciated.

The Council on Dental Research desired to include, from time to time, all areas of clinical practice as well as the laboratory sciences which may have some clinical application. This is difficult to accomplish at the present time because some divisions of the clinical specialties have not as yet developed an active research spirit. The leaders of these groups would render yeoman service to their colleagues and society by encouraging original investigations. However, the Council recognizes the fact that the busy clinician does not have the time or energy to read all of the dental literature. Therefore, these reviews are prepared, by consultants to the Council, to provide in a concise form some of the recent advances in scientific knowledge.

One important feature on which dental education and research must place additional emphasis is the development of methods for the prevention of oral disease. Since several dental diseases have their origin primarily during childhood and adolescence, a major responsibility for the development and practice of preventive measures rests upon those whose teaching efforts or clinical practice lie in these fields. The clinicians have the responsibility of elevating the concept of dentistry in the minds of the public. The public should be taught to regard dentistry as a health service rather than the application of reparative measures.

The Council extends its grateful acknowledgment for valuable assistance in the preparation of this review to Emmett R. Costich, Edward G. Hampp, Norman H. Olsen, William F. Via, Hans A. Beyer and Seymour H. Yale.

NEW DEVELOPMENTS IN ANESTHESIOLOGY

William F. Via, Jr., M.S., D.D.S., and*
Hans A. Beyer,† M.D., Detroit

The success of the practice of anesthesiology today is the result of the development of adequately trained personnel who are capable of utilizing the newer ideas in anesthesiology.

This review will discuss some new anesthetic drugs and technics which may prove helpful in the management of the dental and oral surgery patient.

GENERAL ANESTHESIA

Three drugs have been developed recently which might prove especially helpful in the management of dental or oral surgery procedures. Two of these are for intravenous use and one is an inhalation anesthetic.

Methohexital Sodium • Methohexital sodium is a new ultra-short-acting barbiturate which differs from the established barbiturate drugs in that it contains no sulfur in the molecule and has two positions of unsaturation. Comparison studies of methohexital with other intravenous anesthetics have been carried out by Wyant, Dobkin and Aasheim.[1,2] Methohexital has a greater potency, a shorter duration, requiring more frequent intermittent injections, and, as a rule, a shorter recovery time. The use of a 1 per cent solution is recommended. For continuous drip anesthesia, a 0.1 to 0.2 per cent solution has been used.

In a recent study, methohexital was used for 150 unselected surgical cases. Among these a number of oral surgery procedures were utilized.[3] The drug was used in a 1 per cent solution after the routine premedication with a narcotic and a belladonna alkaloid. Methohexital was supplemented with the administration of nitrous oxide-oxygen, 75 and 25 per cent respectively. The "induction dose," producing sleep after rapid injection, was from 20 to 250 mg., an average of 60.3 mg. The time interval which elapsed between the end of injection of the induction dose to a point of nonresponsiveness to external stimuli (except pain) was from one to two seconds to an isolated instance of several minutes, with an average of 37 seconds. The amount of drug necessary to maintain anesthesia for one hour averaged 246 mg., the range of dosage being 70 mg. to 680 mg.

Hydroxydione • Hydroxydione, a steroid compound with sedative action on the central nervous system, was tried clinically by Ditzler and Dumke.[4] In this country it is marketed as Viadril. This compound does not exert the ordinary hormonal activity which might be expected from its structural formula. Not a potent anesthetic in itself, it is more of a basal anesthetic agent and has to be used with meperidine or other complemental analgesics. Early relaxation of the jaw and the pharyngeal muscles is one of its singular properties, making it especially valuable in operations around the jaw and the pharynx. Onset of anesthesia is slow; the average time to produce sleep is reported as 4.5 minutes, the time required to reach a level of anesthesia where incision is tolerated is nine minutes. The drug produces only slight effect on the circulatory system and does not produce apnea. Of course, an overdose of the accompanying narcotic drug may lead to respiratory arrest. Irritation and phlebitis of the injected vein are not

infrequent. It is recommended, therefore, to add the drug slowly to a rapidly running intravenous infusion, using at least a no. 18 gauge needle. Despite a prolonged postoperative somnolence, the incidence of "hangover" when the effect of the drug has been overcome is surprisingly low.

Fluothane • Fluothane, a new inhalation anesthetic, was described by Pittinger, Cullen and Watland.[5] This drug is a potent, nonexplosive volatile liquid, developed in Great Britain. In addition to its great potency, the drug is not malodorous, it smells much like trichloroethylene. The induction time is short. Good muscular relaxation can be obtained readily and with surprisingly small concentrations. A short recovery time is an additional advantage. The incidence of nausea and emesis is reported to be low. Hypotension and bradycardia, however, are produced not infrequently, but their response to atropine and the usual vasopressors is well preserved.

This report[5] describes 37 outpatients who were anesthetized for from 10 to 60 minutes, mostly for oral surgery procedures. No premedication, except occasionally atropine, was used. The average induction time was reported as four minutes. The recovery time, meaning the period from the end of surgery to a point where the patient was able to answer questions coherently, averaged four minutes. After five more minutes, the patients, as a rule, were able to get up and walk. Among these 37 outpatients, only one instance of emesis was observed. Extensive laboratory studies on renal, hepatic and myocardial toxicity are still in progress. The drug is similar to chloroform in chemical structure. It should be used with extreme care until the laboratory studies are completed.

The continuous intravenous sedation technic for dental office use was described by Olin.[6] The procedure, though certainly not new, is worthy of review. It is stated that sedation, hypnosis and amnesia can be obtained without the help of premedication, though one should insist on the patient's stomach being empty. An intravenous infusion is started and the susceptibility of the patient is determined by means of the injection of a small test dose, for example, 1 to 2 cc. of a 2 per cent solution of thiopental sodium. After two or three minutes, this dose is followed by the dose necessary for amnesia and sedation (usually between 2 and 12 cc.). Then, the usual local anesthetic agent is administered with the patient still cooperative.

The level of depression can be increased as required with the degree of stimulation. The author cautions against the obvious possibility of the patient sliding into the stage of excitement or even into deeper levels of anesthesia. The operator, therefore, must be well acquainted with the management of a full general anesthetic. It is also mandatory that two persons should attend the patient during this period. The recovery time is reported to be short, and the incidence of nausea and vomiting low.

Emergencies • Monheim[7] presented an exhaustive review of the possible complications in connection with the types of anesthesia administered for dental and oral surgical procedures. As a cause of syncope, fainting is to be distinguished from true drug reactions. The importance and high incidence of toxic reactions caused by too rapid absorption of the local anesthetic drug into the blood stream must be stressed. The means by which to prevent such complications are: premedication with a barbiturate, aspiration prior to injection to eliminate intravascular administration and limitation of the total amount of drug used. Idiosyncratic reactions and those of allergic and anaphylactoid nature are extremely rare. The high incidence of reactions to vasoconstrictors is explained in part by the fact that the patient receiving a local

anesthetic already has a high autogenous adrenalin output to which the injected epinephrine is added.

During general anesthesia, the respiratory complications as seen in dentistry and oral surgery are divided into those caused by mechanical obstruction (position, foreign matter, mucus, blood, and so on) and physiological obstruction, mainly laryngospasm and bronchospasm. Cardiovascular emergencies usually arise as a result of respiratory complications. Peterson and Haynes[8] stress the importance of observing the patient preoperatively and obtaining a history.

LOCAL ANESTHETIC AGENTS

A new local anesthetic agent, carbocaine, of interest to dentists, is undergoing clinical trial at the present time. Carbocaine (called "Scandicain" in the German literature) was synthetized by Egner and Ekenstam.[9] The structural formula for carbocaine is similar to that of lidocaine but different from procaine. The lethal toxicity of carbocaine is reported to be greater than procaine, but the same or slightly less than the toxicity of lidocaine.[10,11]

The clinical trials of carbocaine thus far completed indicate the drug has a faster onset of anesthesia than does procaine or lidocaine.[12-14] The degree and duration of anesthesia were found to be sufficient for the operations performed and superior to those achieved with procaine or lidocaine. A minimum of side effects was reported. The occurrence of local irritation at the site of injection was negligible.[15] Less vasoconstrictor was needed with carbocaine than with lidocaine. A concentration of 1:200,000 epinephrine was reported as sufficient by Diederich,[12] indicating the present trend toward higher dilutions of added vasoconstrictor.

A dental trial of carbocaine was reported by Mumford and Gray.[16] A 2 per cent solution with no vasoconstrictor added was used, and the authors reported no difference in onset or duration of anesthesia between carbocaine and lidocaine. Carbocaine, however, was responsible for satisfactory anesthesia in 83 per cent of the patients, whereas lidocaine administration resulted in satisfactory anesthesia in 48 per cent of the patients. The percentage of patients in this study with successful anesthesia after lidocaine had been used compared favorably with the percentage reported in other studies in which lidocaine without added vasoconstrictor was used. No toxic reactions to carbocaine were reported by Mumford and Gray.

Carbocaine must be considered an experimental drug at this time. After more clinical investigation has been completed, it may take a prominent place among the anesthetic drugs used by the dental profession.

Chloroprocaine hydrochloride (Nesacaine hydrochloride) deserves mention because the drug is used extensively in general surgery, but is relatively untried in dentistry. Chloroprocaine is similar to procaine in chemical structure and pharmacodynamics. The anesthetic potency of chloroprocaine is twice that of procaine. Because it is hydrolyzed by plasma cholinesterase more rapidly than procaine, the chance of toxic reactions is reduced.[17] A series of dental clinical trials of chloroprocaine at this time seem warranted.

ARMAMENTARIUM

The clinical trial of an adaptation of the jet injection apparatus for dental local anesthesia was reported by Margetis and co-workers.[18] Jet injection is defined as forcing a liquid through a small orifice at high pressure and at a speed sufficient to cause the liquid to penetrate skin or mucous membrane when the nozzle of the device is held against the tissue to be injected. In the present trial, successful anesthesia resulted in 87 per cent of the

injections. The types of injections and site of injections were similar to those used in the routine syringe needle technic.

The main disadvantage of jet injection is the frequent occurrence of bleeding at the site of injection. Occasionally tenderness at the injection site persisted for 24 to 48 hours. The major advantages of the jet injection technic are: no discernible injection pain, less danger of transmitting the virus of infectious hepatitis and no hazard of needle fracture. Before the jet injection method can come into general use in dentistry, the problem of bleeding at the injection site must be solved. Further clinical and laboratory investigation of the technic is warranted because the evidence presented thus far indicates great promise.

TOPICAL ANESTHETICS

The recent introduction into dentistry of an aerosol topical anesthetic spray containing tetracaine, and the use of water soluble cream bases for other topical anesthetic agents, make a discussion of the possibility of overdosage from incorrect use of these drugs imperative.

Two recent studies[19,20] have shown that the topical application of tetracaine to certain mucous membrane areas results in a blood level curve similar to that seen after injection of the anesthetic solution directly into a vein. Within four to six minutes after topical application of the drug, the local anesthetic concentration in the blood stream was from one third to one half the concentration found after rapid intravenous injection of an equivalent dose. By contrast, the concentration of anesthetic agent in the blood stream is minimal after infiltration or routine block injections. The rate of absorption of topical anesthetics is not the same from all mucosal surfaces. The lung alveoli absorb the drugs most rapidly.

Rapid absorption was also shown for the trachea and pharynx. Since other drugs diffuse quickly through the sublingual mucous membrane, it is safe to assume that topical anesthetic agents will act in a similar fashion.

The most important means of preventing reactions to topical anesthetics is to limit the dose. The concentration of the drug in the blood stream is a function of the total number of milligrams of drug administered, not of the concentration used. Using 1 Gm. (50 cc. of 2 per cent solution) of procaine as a standard maximum dose for infiltration anesthesia as a base, the amount of tetracaine which may be used safely can be calculated. Tetracaine is ten times as toxic as procaine and in topical application one fourth of the infiltration dose gives rise to difficulties. Therefore, 20 mg. (1 cc. of 2 per cent solution) of tetracaine is approaching the limit which may be used safely for topical application. Quantities less than this may cause reactions, because this rule does not allow for variations in individual susceptibility and technic of application.

It is conceivable that when using 2 per cent spray of tetracaine for anesthetizing the oral mucous membrane for deep scaling and impression taking, or to control gagging, the maximum safe dose may be easily approached or exceeded.

Lidocaine is only twice as toxic as procaine. The maximum safe dose of lidocaine for topical application is approximately 125 mg., that is, 2.5 cc. of the 5 per cent ointment. Since the amount of ointment usually applied is far less than 2.5 cc., one need not be concerned that the maximum safe dose will be approached.

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1. Wyant, G. M.; Dobkin, A. B., and Aasheim, G. M. Comparison of seven intravenous anaesthetic agents in man. Brit. J. Anaesth. 29:194 May 1957.
2. Dobkin, A. B., and Wyant, G. M. The physiological effects of intravenous anaesthesia on man. Canad. Anaesth. Soc. J. 4:295 July 1957.
3. Dumke, P. R. Personal communication.
4. Ditzler, J. W., and Dumke, P. R. Experiences with hydroxydione. Anesth. & Analg. 36:45 Nov.-Dec. 1957.

5. Pittinger, C. B.; Cullen, S. C., and Watland, D. C. Observations on a new anesthetic agent, fluothane. A.M.A. Arch. Surg. 75:339 Sept. 1957.

6. Olin, M. J. Continuous intravenous sedation; its applicability in the dental office. J. Oral Surg. 15:286 Oct. 1957.

7. Monheim, L. M. Treatment and prevention of emergencies incidental to the use of anesthesia and antibiotics. J. Oral Surg. 15:289 Oct. 1957.

8. Peterson, L. W., and Haynes, C. E. Premedication and sedation for the surgical patient. J. Oral Surg. 16:131 March 1958.

9. Ekenstam, B. af., and others. Trials with carbocaine—a new local anaesthetic drug. Brit. J. Anaesth. 28:503 Nov. 1956.

10. Frahm, M. Beiträge zur pharmakologischen Auswertung neuer Lokalanalgetica. Anaesthesist 7:44 Feb. 1958.

11. Ulfendahl, H. R. Some pharmacological and toxicological properties of a new local anaesthetic, carbocaine. Acta. Anaesth. Scandinavica 1:81, 1957.

12. Diederich, M. Erfahrungen mit dem neuen Lokalanästhetikum Scandicain im klinischen Routinebetrieb. München. m. Wschr. 100:386 March 7, 1958.

13. Dam, W., and Guldmann, N. Carbocaine—a new local anaesthetic. Acta. Anaesth. Scandinavica 1:101, 1957.

14. Griesser, G. Über ein neues Lokalanaesthetikum—Scandicain. Deut. med. Wschr. 82:2071 Dec. 6, 1957.

15. Nilsson, E., and Wendeburg, B. The effect of local anaesthetics on wound healing. An experimental study with special reference to carbocaine. Acta. Anaesth. Scandinavica 1:27, 1957.

16. Mumford, J. M., and Gray, T. C. Dental trial of carbocaine, a new local anaesthetic. Brit. J. Anaesth. 29:210 May 1957.

17. American Medical Association Council on Drugs. New and nonofficial drugs. Philadelphia, J. B. Lippincott Co., 1958, p. 6.

18. Marget's, P. M.; Quarantillo, E. P., and Lindberg, R. B. Jet injection—local anesthesia in dentistry. U. S. Armed Forces M. J. 9:625 May 1958.

19. Campbell, D., and Adriani, J. Absorption of local anesthetics. J.A.M.A. 168:873 Oct. 18, 1958.

20. Adriani, J., and Campbell, D. The absorption of topically applied tetracaine and cocaine. Laryngoscope 68:65 Jan. 1958.

NEW AND USEFUL DRUGS

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Advances in the field of pharmacology continue to bring new drugs to the attention of the dental profession. Those agents with the most widespread application in dentistry will be discussed. New classifications of older drugs and recent reports re-evaluating older drugs also will be included.

PSYCHOTHERAPEUTIC AGENTS

Because of the confusion caused by the rapid introduction and reintroduction of drugs to "tranquilize" and give "peace of mind," the Council on Drugs of the American Medical Association[1] adopted the term "psychotherapeutic drugs" and voted to abandon the section on ataraxics in *New and Nonofficial Drugs*. The Council plans to . . . "describe agents proposed for use for their particular effects on the central nervous system, in accordance with their fundamental pharmacological classification, insofar as this is known. On the basis of present knowledge, the drugs in this general category. . . ." were classified as follows:

I. Antihistamines
   A. Psychotherapeutic antihistamines
II. Central Nervous System Depressants
   A. Nonselective depressants (analgesics, general anesthetics, sedatives, hypnotics)
   B. Selective depressants
      1. Anticonvulsants
      2. Antihistamines
      3. Antitussives
      4. Central muscle relaxants (skeletal muscle relaxants), nonsedative
      5. Central muscle relaxants (skeletal muscle), sedatives
      6. Central parasympathetic suppressants
      7. Central sympathetic suppressants, phenothiazine derivatives
      8. Central sympathetic suppressants, rauwolfia derivatives
III. Central Nervous System Stimulants
IV. Miscellaneous Agents

The dental profession has shown interest in the field of drugs purported to

give "peace of mind." The afore-mentioned classification should be helpful to the dentist in the selection of drugs for various problems. For example, antihistamines are generally antisecretory and so an agent with both calming and salivary suppressing powers would be very helpful in the field of operative dentistry. In the field of prosthetics, the use of a central muscle relaxant that would effect skeletal muscle relaxation and be nonsedative might be useful in establishing a centric relationship for some patients, and the use of a central muscle relaxant which is sedative might be useful for the patient who is having a difficult time adjusting to new dentures.

Hydroxyzine (Atarax) is classified as a psychotherapeutic antihistamine.[1] It is a fast-acting antisecretory hypnotic.[2,3] No reports of clinical studies of this drug in the field of dentistry were found in preparing this review.

Promethazine (Phenergan) is another antihistamine with hypnotic and antisecretory properties. Stuebner and Sadove[4] feel that this agent has definite advantages in premedication for general anesthesia.

Ethinamate (Valamid) is a fast-acting hypnotic and its duration of action is relatively short. It is not metabolized by the liver or kidneys. These are desirable properties for an hypnotic drug to be used in dentistry.[5,6] Redish and Ping[7] have reported on the use of ethinamate in oral surgery. They found that this drug produced sedation in a short time with no lingering side effects.

Meprobamate (Equanil, Miltown) has been suggested for use by patients adjusting to newly fitted prostheses.[8] The drug is a central muscle relaxant (skeletal muscle relaxant), sedative.[1] It produces sedation which may be a problem in some patients and all patients should be advised of the probability of drowsiness. This factor may be relieved as the patient develops tolerance but the development of tolerance may be a disadvantage. Patients have been reported to manifest withdrawal symptoms after long periods of use.[3] This should be considered when prescribing this drug for a long interval in conjunction with the delivery of prosthetic appliances. Dosage should be adjusted to the needs and reactions of individual patients.

Szmyd, McCall and Enright[9] studied promazine (Sparine) and meprobamate (Equanil, Miltown) in oral surgery. They carried out a double blind study on 150 patients having lower third molars removed. Those patients receiving the psychotherapeutic agents showed no difference from the controls with regard to pain, postoperative swelling, trismus, degree of cooperativeness or postoperative narcotic requirements. The only difference noted was that the subjects receiving promazine and meprobamate remained away from work for a longer period of time. This was apparently due to the mild sedative effect of these drugs.

The psychotherapeutic agents may potentiate the action of other drugs. This possibility should be investigated before using a drug, by obtaining information from the patients about all drugs which they are taking and checking on the potentiating power of the drug intended for use. The ability to potentiate the action of other drugs can be helpful. Phenothiazine compounds such as chlorpromazine (Thorazine), mepazine (Pacatal), promethazine (Phenergan) and diphenhydramine (Benadryl) potentiate the action of agents used in general anesthesia thereby reducing the amount of anesthetic necessary to induce and maintain anesthesia.[10] Clifford,[11] in an editorial, advised pediatricians to "make haste slowly" in using these drugs for "peace of mind." He quoted from a report of the Psychopharmacology Service Center of the National Institute of Mental Health saying, "The Center's advisors and its staff have been concerned by the paucity of studies, controlled or otherwise, of drug effectiveness in neurotic or other nonhospitalized pa-

tients." This is certainly true of the use of these drugs in dentistry.

ANALGESIC AGENTS

There was progress in the field of analgesics, despite the controversy of buffered versus nonbuffered acetylsalicylic acid. The latter will not be resolved quickly.

The dentist should remember that aspirin is poisonous in large doses. Its common use for the relief of pain often leads to negligence in the storage of these drugs in the home. Many children die each year from taking aspirin tablets carelessly left within their reach. The dentist who dispenses analgesics should caution the patient to keep the tablets away from children and to dispose of unused tablets in the lavatory or toilet. The minimum fatal dose for children is 1.6 Gm. (25 grains).[12] The usual aspirin tablet contains 0.3 Gm. (5 grains). If a parent calls the office saying that his child has taken five or more adult size tablets, treat the situation as an emergency, ordering an emetic and prompt medical attention.

Dextropropoxyphene (Darvon) is a new analgesic agent. It is reported to be as potent as codeine as an analgesic but devoid of codeine's side reactions of nausea and vomiting.[13] It is available in 30 mg. and 60 mg. capsules alone or compounded with acetophenetidine, acetylsalicylic acid and caffeine.

Ethoheptazine (Zactirin) is another new analgesic that is chemically similar to meperidine (Demerol). This drug is available as a compound containing 75 mg. of ethoheptazine citrate and 0.325 Gm. of acetylsalicylic acid. This drug also has been reported to be equal in analgesic properties to the combination of codeine and aspirin.[14]

A new antitussive agent, dextromethorphan (Romilar, Tusilan), is a synthetic structurally similar to morphine. It should be a helpful agent for the dentist to use in suppressing a patient's cough during treatment.[15]

These last three drugs described are either substitutes for or are chemically similar to codeine, meperidine and morphine. They apparently are not habit-forming.[16] A narcotic license is not required in order to issue prescriptions for or to keep a supply of these new drugs in the office.

NARCOTICS

A new narcotic agent, anileridine (Leretine), may be given orally or intramuscularly. The dosage range for adults is from 25 to 50 mg. or about half the usual dosage of meperidine.[17]

Alphaprodine (Nisentil) may be given intramuscularly or intravenously. It has been reported to give good preoperative analgesia for various dental procedures.[18]

A narcotic license is necessary to prescribe or dispense these two drugs.

NARCOTIC ANTAGONISTS

Nalorphine (Nalline) and levallorphan (Lorfan) will overcome the respiratory depression caused by narcotics. The antagonists themselves will cause respiratory depression if given in excessive doses. These drugs may be given intravenously or intramuscularly. Dosage for nalorphine is 2.5 mg. and for levallorphan it is 0.5 mg. The dentist using nalorphine is required to have a narcotic license. It is not required when levallorphan is used.[17]

HYPNOTIC ANTAGONIST

Methylphenidate (Ritalin) is a new analeptic agent. It is a central nervous system stimulant and has no appreciable influence on blood pressure, circulation or heart rate. The drug is given intramuscularly or intravenously and the dosage range is from 10 to 30 mg. The amount given is determined by the degree of depression manifested by the patient and the anticipated dosage should be given in divided amounts.[19]

ANTI-INFECTIVE AGENTS

The year 1958 was one of contemplation and review in the area of antibiotics. No completely new members were introduced into this group by way of publications in the dental literature. There were some modifications of previously used drugs to render them capable of maintaining higher blood levels with minimum side effects.

Rosenthal[20] presented a study on the findings in 30 authenticated fatal anaphylactic reactions to penicillin. He pointed out that there are possible unknown sensitivities to penicillin induced by ingestion of milk containing penicillin. This latter problem results from the use of penicillin in treating mastitis and other bacterial infections in dairy cattle. He also noted that the products of certain dermatophytes, such as those causing athlete's foot, may be absorbed and sensitize a patient to penicillin. Most of the polio vaccines contain traces of penicillin. Careful inquiry regarding allergic reactions should be made before giving penicillin or any other antibiotic agent.

Welch and co-workers[21] reported on a nationwide survey and indicated that penicillin produced the greatest number and most severe reactions of all antibiotics now available. This type of information should make the dentist cautious about the use of penicillin. Antibiotics should not be used indiscriminately.

A new drug to help combat penicillin reactions is available. The enzyme penicillinase (Neutrapen) may be given to destroy penicillin after it has been injected. This is given in addition to the usual treatments for severe reactions. Penicillinase may be used prophylactically when giving polio vaccine or drugs with penicillin as a preservative. It cannot be used prophylactically if the penicillin is given for antibacterial action. People reporting any sensitivity to penicillin and in need of antibiotic therapy should receive one of the other broad spectrum antibiotics.

Gamma globulin for the treatment of herpetiform lesions will be included in *New and Nonofficial Drugs* this year.[22] Strean, Williams and Prichard,[23] and Ramfjord[24] have reported on the use of gamma globulin for this condition. Dosage ranges from 2.5 cc. to 20 cc. daily to every fourth day, for as long as six weeks. Subsequent dosage is determined by individual response. This gives variable results but it is another aid to the treatment of a difficult problem.

The use of orally administered proteolytic enzymes to aid in the treatment of infection and to minimize postextraction swelling was reported.[25] This was a preliminary study using streptokinase-streptodornase tablets. Further studies are needed.

HEMOSTATIC AGENTS

No new hemostatic agents were reported. A report on injectable preparations for hemostasis[26] pointed out that vitamin K has almost eliminated the problem of bleeding due to hypoprothrombinemia, that cortisone and related compounds such as prednisolone have proved beneficial in treating bleeding due to thrombocytopenic purpura, and that the most effective hemostatic agent with a wide therapeutic range is fresh frozen plasma given intravenously. Drugs to control capillary bleeding, such as carbazochrome salicylate and conjugated estrogenic substances, were said to be in need of more investigation to substantiate these claims.

Calnan and Innes[27] reported on a double blind study of carbazochrome salicylate (Adrenoxyl, Adrenosem). They concluded, on the basis of 76 patients, that the use of adrenochrome monosemicarbazone had no effect on capillary bleeding at the time of operation.

LOCAL ANESTHETICS

There were no comprehensive reports of clinical studies with new local anesthetics

during the year 1958. Kramer[28] tested seven solutions and reported that lidocaine (Xylocaine) 2 per cent with epinephrine 1:50,000 was superior to other anesthetics tested for both block and infiltration anesthesia. He found all the solutions to produce anesthesia of equivalent duration except procaine 2 per cent with epinephrine 1:60,000 which was shorter in duration. Inferior alveolar block with the seven anesthetics showed considerable variation in duration of anesthesia.

Campbell and Adriani[29] reported on the absorption of local anesthetics after topical application. They noted that absorption of anesthetics from the mucous membrane of the pharynx and trachea can give blood levels equivalent to those obtained by intravenous injections. Dentists using topical anesthetics in children, or to control gagging in adults, should know the symptoms of untoward reactions to the anesthetics being used and be prepared to treat such reactions.

GENERAL ANESTHETICS

A new general anesthetic, halothane (Fluothane), which is a fluorinated ethane derivative, was reported on in 1958.[30] It is a nonflammable material for inhalation, effective for general anesthesia in a concentration of 1 to 3 per cent. This narrow margin of concentration makes it impossible to use standard anesthesia machines and requires special adaptive equipment. Its favorable properties, as far as oral surgery is concerned, are:

1. Fair muscle relaxation with the muscles of mastication being the first to be relaxed.
2. Rapid induction and recovery.
3. No stimulation of mucous secretion.
4. Infrequent nausea and vomiting in the postanesthetic period.

The new anesthetic has a direct cardio depressant action which will produce a slowing of the heart and a drop in blood pressure. The patients receiving halothane should not receive epinephrine or norepinephrine because of the danger of ventricular fibrillation. This is a very new drug and will require more laboratory and clinical experience before it is firmly established in the field of general anesthetics.

ANTI-INFLAMMATORY AGENTS

Postextraction alveolar osteitis, or "dry socket," is a chronic problem for the dentist and the suggested forms of therapy are numerous. Fry and Goldman,[31] reporting in the *British Dental Journal*, have presented a new medicament for this disturbing condition. The principal ingredient is glycyrrhetinic acid. They indicate that this material has a structural formula which resembles hydrocortisone but which is nonsteroidal triterpene. They carried out a blind investigation extending over a six month period with the results of this test, in their opinion, establishing the value of this new agent. As might be expected, this article by Fry and Goldman precipitated many letters to the editor of the *British Dental Journal* containing a variety of interesting and unusual technics for the treatment of "dry socket."

DISCUSSION

Any review must be limited in detail. The purpose of this review has been to attempt to stimulate interest in new drugs and to mention the findings of recent investigations of old drugs.

Advances in the field of pharmacology have made dental treatment easier for the dentist, less trying for the average patient and a possibility for the handicapped patient.[32,33]

Oxygen is not a new drug but this article cannot end without a reminder that no patient can live without it. Every dental office should have oxygen available for emergency use, be it drug reaction, coronary occlusion or simple syncope.

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1. American Medical Association, Council on Drugs. Psychotherapeutic drugs. J.A.M.A. 166:1040 March 1, 1958.

2. Ende, M. Clinical evaluation of atarax, a nonbarbiturate calming agent. Virginia M. Monthly 83:503 Nov. 1956.

3. Friend, D. G. The tranquilizers. M. Clin. North America 42:1253 Sept. 1958.

4. Stuebner, E. A., and Sadove, M. S. The use of promethazine for premedication. J. Am. D. Soc. Anesthes. 5:12 May 1958.

5. Foltz, E. L.; Dracos, F., and Gruber, C. M., Jr. A comparison of hypnotic effects of chloral and ethinamate. Am. J. M. Sc. 230:528 Nov. 1955.

6. Current concepts in therapy; sedative-hypnotic drugs. V. The nonbarbiturates. New England J. Med. 256:314 Feb. 14. 1957.

7. Redish, C. H., and Ping, R. S. Ethinamate (Valmid) in dentistry. Oral Surg., Oral Med. & Oral Path. 11:742 July 1958.

8. Lund, L., and Anholm, J. M. Clinical observations on the use of meprobamate in dental procedures. Oral Surg., Oral Med. & Oral Path. 10:1281 Dec. 1957.

9. Szmyd, L.; McCall, C. M., and Enright, E. T. Tranquilizing drugs in oral surgery. J. Oral Surg. 16:310 July 1958.

10. Lear, E., and others. Comparative studies of tranquilizers used in anesthesia. J.A.M.A. 166:1438 March 22. 1958.

11. Clifford, S. H. Tranquilizers. J. Ped.at. 53:764 Dec. 1958.

12. Sollmann, T. A manual of pharmacology, ed. 8. Philadelphia: W. B. Saunders Co., 1957, p. 741.

13. Gruber, C. M., Jr. Codeine phosphate, propoxyphene hydrochloride and p'acetin. J.A.M.A. 164:966 June 29. 1957.

14. Cass, L. J.; Frederik, W. S., and Bartholomay, A. F. Methods of evaluating ethoheptazine combined with aspirin. J.A.M.A. 166:1829 April 2. 1958.

15. American Medical Association, Council on Drugs. New and nonofficial drugs. Philadelphia, J. B. Lippincott Co., 1958, p. 309.

16. Wallace, D. A. Sedative and analgesic therapy. J. Michigan D. A. 40:268 Nov. 1958.

17. Schiffrin, M. J.; Sadove, M. S., and Anderson, A. G. Narcotic analgesics as adjuncts to dental practice. J.A.D.A. 57:71 July 1958.

18. Lamb, H. The use of nisentil in general practice. J. Michigan Med. Soc. 57:706 May 1958.

19. Christensen, R. O. A new agent for shortening recovery time in oral surgery. Oral Surg., Oral Med. & Oral Path. 11:999 Sept. 1958.

20. Rosenthal, A. Follow-up study of fatal penicillin reactions. J.A.M.A. 167:1118 June 28, 1958.

21. Welch, H., and others. Severe reactions to antibiotics: a nationwide survey. Antibiotic Med. 4:800 Dec. 1957.

22. American Medical Association, Council on Drugs. Use of poliomyelitis immune globulin (human) for oral herpetiform lesions. J.A.M.A. 168:183 Sept. 13, 1958.

23. Strean, L. P.; Williams, B. H., and Prichard, J. Oral herpetiform lesions treated with gamma globulin. Oral Surg., Oral Med. & Oral Path. 11:266 March 1958.

24. Ramfjord, S. P. Recurrent herpetic gingivostomatitis treated with gamma globulin. Oral Surg., Oral Med. & Oral Path. In press.

25. Golden, S. S.; Dankoff, M. H., and Korchek, D. L. A clinical appraisal of the anti-inflammatory effect of streptokinase. Oral Surg., Oral Med. & Oral Path. 11:1244 Nov. 1958.

26. Questions and answers. Injectable hemostatic preparations. J.A.M.A. 167:1693 July 26, 1958.

27. Calnan, J., and Innes, F. L. F. Control of bleeding at operation: a trial of adrenochrome monosemicarbazone (Adrenoxyl). Brit. J. Plast. Surg. 11:87 July 1958.

28. Kramer, W. S. A comparative clinical evaluation of some commonly used local anesthetic compounds. J.A.D.A. 56:820 June 1958.

29. Campbell, D., and Adriani, J. Absorption of local anesthetics. J.A.M.A. 168:873 Oct. 18. 1958.

30. Stephen, C. R.; Lawrence, J. H.; Fabian, L. W.; Bourgeois-Gavardin, M.; Dent, S., and Grosskreutz, D. C. Clinical experience with fluothane—1 400 cases. Anesthesiology 19:197 March-April 1958.

31. Fry, W. K., and Goldman, V. A new treatment of "dry socket". Brit. D. J. 104:55 Jan. 21. 1958.

32. Album, M. M.; Davies, G. N., and Gelmon, S. R. Treatment of the difficult child. Internat. D. J. 8:475 Sept. 1958.

33. Jorgensen, N. B.; Levine, M. G., and Hurley, C. T. Dental management of adult patients with cerebral palsy. J.A.D.A. 57:843 Dec. 1958.

MICROBIOLOGY

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Dental caries investigations have for many years dominated the research endeavor in the field of oral microbiology. Although this is commendable, a more diversified approach to the many oral health problems is desirable. It appears from a recent review of the literature that a trend in this direction is becoming manifest, as indicated by many of the diversified and fundamental approaches to the various problems of dentistry herein recorded. It is interesting to note that many of these studies are directed at the basic problems concerned with periodontal disease which is one of the major oral health problems in need of a more equitable share of fundamental research efforts.

ORAL FLORA

In recent years, technics and selective media have been developed for a diver-

sified group of microorganisms comprising the oral microbiota. Richardson and Jones[1] have taken advantage of these developments to survey 14 salivary bacterial categories simultaneously in an equal number of human subjects on ten different occasions. Although the subject group employed for this study was small, data were available to indicate that an index of gingival health may be obtained on the basis of statistically significant, high or low, population counts in certain categories of organisms.

Bartels and co-workers[2] studied the factors which limit the establishment of beta-hemolytic streptococci as members of the oral microbiota. They were not able to ascertain at this time whether an inhibitory factor was produced in the saliva or an essential growth factor was removed from the saliva by the growth of oral microorganisms. Evidence was presented, however, that if it was an inhibitory substance, it was neither lysozyme nor hydrogen peroxide.

There have been two reports by Nevin and others[3, 4] on surveys of the oral cavity for bacterial nutrilites employing two strains of streptococci as the test organisms. It was shown that significant amounts of growth factor activity were present in nonstimulated saliva and these were related to four vitamins—riboflavin, niacin, pantothenic acid and biotin. There was no increase in the levels of activity of these vitamins after ingestion of a standard test meal, with the exception of biotin. The second phase of the study was concerned with the availability of the same vitamin activity in 33 samples of gingival tissue, 18 of which were inflamed. The noninflamed tissue samples usually assayed higher than inflamed tissue samples for activity related to riboflavin, niacin and biotin. The content of pantothenic acid activity of both types of tissue was essentially the same. Negative assays for one or more growth factors were encountered occasionally in certain tissue samples; a number of these evidenced inhibition of the test organisms and this was more pronounced in the noninflamed tissue samples.

Boyd and Rosenthal[5] reported on the presence of bacteria in the healthy gingival sulcus and, contrary to the observations of other workers (Waerhaug and Steen), found that this location was not sterile.

Leavitt and co-workers[6] reported on the use of a medium in endodontics for cultivation of aerobic and anaerobic organisms. With this medium they obtained a wider and different variety of organisms than that encountered with dextrose broth commonly employed in endodontics, and the microorganisms thus obtained were discussed in detail. A bacteriophage obtained from a pooled mouth specimen and specific for an oral strain of *Lactobacillus casei* was reported by Meyers and others.[7] The authors discuss the possible use of Lactobacillus bacteriophage in the identification of the lactobacilli, as well as mention the possible relationship of oral bacteriophages to oropharyngeal infections.

Young[8] has reported on the process of invasion and the persistence of oral strains of *Candida albicans* injected intraperitoneally into mice. The inoculum for the animals consisted of spherical cells with numerous buds, and within one hour after injection 60 per cent of the cells developed pseudomycelia. Under the conditions of this experiment, the mycelial, rather than the yeast phase, appeared to be the infective form and the route of invasion from the peritoneal cavity was shown to be by way of the pancreas and its blood vessels. The organisms were found to persist in the kidneys up to six months. A detailed discussion was presented of the tissue section phase of the study.

Two reports have appeared in the literature on oral filamentous microorganisms previously designated as Leptotrichia or Leptothrix. In this respect, Gilmour and Hunter[9] isolated 60 strains of

the organisms from oral specimens obtained from 20 subjects. The typical cell type was a nonseptate filament with one end attached to a bacillus-like body. Dichotomous branching was observed. The technics and media employed in this work were described in detail. The other report, by Howell and Rogosa,[10] describes media and technics employed for obtaining 42 strains of *Leptotrichia buccalis* from oral samples of human subjects. A commentary was presented on colonial and cellular characteristics of the isolates, and their findings are in agreement with those of Gilmour and Hunter. The authors of both reports indicate that the taxonomic positioning of these microorganisms awaits further study.

Shiota and Kunkel[11] reported on bacterial and chemical changes in incubated saliva. It was pointed out that ammonia and indole were considerably increased when glucose was added, and streptococci and lactobacilli increased in number. Fusiforms grew and maintained themselves in the absence of glucose. Veillonella increased in the presence of sodium lactate, but to a lesser extent with added glucose.

McMillan and co-workers[12] examined material, obtained from periodontal pockets, by means of the electron microscope. Photomicrographs were presented of the microorganisms and collagen fibers observed in this material. Rogosa and co-workers[13] reported on an improved vancomycin-containing medium for the selective isolation and enumeration of Veillonella.

ENZYMOLOGY

Rovelstad and others[14,15] established base line data on human salivary hyaluronidase by extensive study of young adult males over a six-week period and by evaluation of the enzyme in a large group of naval recruits at weekly intervals for three weeks. By use of these data, no correlation was found between caries and salivary hyaluronidase. A large amount of enzyme activity, however, was associated with increasing degrees of gingivitis and with poor oral hygiene. Another study conducted by Rovelstad and co-workers[16] demonstrated that salivary hyaluronidase activity decreased after intramuscular ingestion, or oral use, of penicillin. The enzyme activity, however, was not reduced to negligible activity. A reduction in hyaluronidase activity by antibiotics is to be expected since other workers have demonstrated that the enzyme is of bacterial origin.

Dewar[17] investigated the presence of carbohydrases and proteinases in gingival debris obtained from individuals with varying degrees of gingival and periodontal disease. Hyaluronidase, chondroitin sulfatase and gelatinase always were present in unfiltered samples; hide-powder collagenase was present in most samples; native collagenase was more commonly found in patients with marginal gingivitis and periodontoses than in normal individuals. The enzymes were found infrequently in filtered material. Very slight proteolytic enzyme activity was demonstrated in pure cultures of spirochetes and fusobacteria. Portions of these studies confirm the work of other investigators in the field.

Pepper and co-workers[18] studied the decomposition of a purified mucopolysaccharide, chondroitin sulfuric acid, by a crude enzyme preparation of bacteria of dental origin. The enzyme was also effective in the hydrolysis of the mucopolysaccharide of the enamel of bovine teeth. In view of the presence of chondroitin sulfate in dental hard tissue and the results thus obtained, the authors suggest the enzyme action as the mechanism of initial carious penetration. Kraus and co-workers[19] reported on salivary catalase and peroxidase values in normal individuals and persons with periodontal disease. The average values for both enzymes were significantly higher for individuals with periodontal disease. The authors suggest

that the proliferation of anaerobes in cases of periodontal disease may be due to the increase in these reducing enzymes.

A comprehensive monograph, in three parts, concerning the establishment of the types of mucopolysaccharides present in human gingival tissue was reported by Schultz-Haudt.[20] Apparently, pure hyaluronate and chondroitin sulfate were obtained by electrophoresis of crude polysaccharide mixtures of gingiva carried out in slabs of Celite Filter-aid. These substrates were exposed to the action of mixed cultures, or pure cultures of *Streptococcus mitis*, or of a diphtheroid organism. The pure strains of organisms were obtained from gingival crevices. *S. mitis* hydrolyzed the hyaluronate, whereas the diphtheroid organism digested the hyaluronate and a portion of the chondroitin sulfate. The role of the oral microorganisms in relation to periodontal disease was discussed.

Thonard and Scherp[21] reported on the inhibition of collagenase activity of *Clostridium histolyticum*, or culture filtrates of this organism, when incorporated in broth at 37°C. with gingival tissue containing its indigenous microbiota. The gingival tissue was obtained from patients with periodontitis simplex. When antibiotics were used in the system to suppress the oral microorganisms, collagenolysis was not inhibited. A soluble collagenase inhibitor was not demonstrated. Smith and others[22] investigated the relationship between infection and pathologic changes in the dental pulp and periapical region, utilizing pure cultures of organisms obtained from diseased root canal material. The enzymes elicited from the various organisms were studied and attempts to correlate these with roentgenographic periapical lesions were unsuccessful.

DENTAL CARIES

Sims and Snyder[23] reported on the relationship of oral Veillonella to dental caries, by the use of a highly selective medium for the organisms, in a caries active and caries inactive group of children. Veillonella counts and caries activity were found to be unrelated. Mahler and co-workers[24] conducted an in vitro study of the bactericidal action and glycolytic inhibition of a group of inorganic and organic chemicals on a selected group of oral microorganisms, salivary sediments and dental plaques of human origin. Of the 18 compounds tested, seven inhibited glycolysis and six were bactericidal and, under their testing conditions, no association was found between glycolytic inhibition and bactericidal effect. Studies were reported by Onisi and Nuckolls[25] on the classification of 86 pleomorphic strains of bacteria obtained from pigmented carious lesions of human dentin. These were divided into six groups, as follows: four were identified with Nocardia, Actinomyces, Corynebacterium and Bacillus; the two remaining categories were not clearly delineated for purposes of positive identification; there remained six strains of organisms that appeared to be Eubacteriales but they were quite variable in morphology and biochemistry.

Rovelstad and co-workers[26] grouped 1,049 young men into three groups, 63 without evidence of caries experience, 131 with one to six carious surfaces, and 138 subjects taken at random. There was no significant difference in salivary pH values, acid neutralizing ability, or salivary hyaluronidase activity; however, there were significant differences in flow rate, Snyder test and lactobacillus counts.

Cohen and Collins[27] reported on a preliminary study to determine the relationships of *Streptococcus salivarius* to dental caries and to oral lactobacilli. The material thus recorded was primarily concerned with technics and base line data for future investigations.

Rosen and co-workers[28] studied the effect of salivariadenectomy on caries initiation in caries susceptible and caries resistant rats. It was shown that salivaria-

denectomy resulted in an increase in lactobacilli, but not other oral microorganisms.

ANTIBIOTICS, CHEMOTHERAPY AND TREATMENT

Mandel and others[29] reported on the apparent stimulation of *Candida albicans* by chlortetracycline. They demonstrated neither stimulation nor inhibition by the antibiotic in concentrations up to 100 micrograms per milliliter. Stevens and Harrison[30] investigated the sensitivities of Bacteroides and similar forms to 13 different antibiotics. The results were variable with respect to the strains; however, all strains were sensitive to chloramphenicol and chlortetracycline and most were found to be resistant to penicillin and dihydrostreptomycin. There have been two reports on the treatment of actinomycosis of dental origin. Holmes[31] reported on 12 cases and Choukas[32] on one case. Treatment continues to consist of adequate incision and drainage of abscesses and employment of sufficiently large doses of penicillin over a long period of time.

Strean and co-workers[33] reported on the treatment of 25 patients with gamma globulin for herpetiform lesions. Although good results were obtained in some instances with a minimum amount of gamma globulin, other patients required an exceedingly large number of daily injections of this material.

Recently, various polyantibiotics have been recommended for management of infected dental pulps. Rubbo and others[34] reported on an aqueous solution of neomycin, bacitracin, polymyxin, 5-chloro-2-(p-diethylamino-ethoxyphenyl) benzthiazole tartrate with 1:10,000 noradrenaline for this purpose. It is not affected by blood, serum or necrotic tissue and retains activity for several days in vivo. The bactericidal and fungicidal properties, as well as clinical application of the polyantibiotic, were discussed by the authors. Gurney and co-workers[35] reported on the use of para-aminotoluene sulfonamide hydrochloride in endodontic therapy. The drug has a wide antibacterial spectrum, its toxicity is of low order and it is suggested that it is almost an ideal agent for endodontic purposes.

Brown and others[36] reported on the use of novobiocin in the treatment of a group of 51 individuals with infections of odontogenic origin. A clinical evaluation of the study group was presented and the authors feel that the antibiotic should be added to the dentist's armamentarium of drugs.

The bactericidal properties of Kasdenol (chlorpactin) in the presence of saliva were evaluated by Rosenthal.[37] It was found that the agent had poor germicidal effect and little ability to dissolve necrotic tissue. Bennett[38] examined 50 anesthetic needles that had been exposed to air after sterilization and 50 needles that had been covered with absorbent cotton after sterilization. In ten of the exposed needles and 20 of the cotton covered needles, saprophytic organisms were found after 15 minute exposure. The author discussed the potential hazards of such procedures.

Bender and co-workers[39] reported on an extensive study designed to investigate the effect of preoperative local and systemic antibiotic therapy for the prevention of postextraction bacteremias. The study included blood cultures, bacterial counts of saliva, identification and frequency counts of organisms isolated, in vitro sensitivity tests of bacteria and assays for antibiotic levels in blood and saliva. Detailed discussions were presented on the various aspects of the study.

Ingle and Zeldow[40] evaluated mechanical instrumentation and the "negative culture" in endodontic therapy. It was shown, as might be expected, that mechanical instrumentation and irrigation of root canals with sterile distilled water were very ineffective means of sterilization of these regions. Streitfield and Zinner[41] reported on a study concerned with the microbiologic hazards associated with

local dental anesthesia. Emphasis was placed on adequate preparation of the injection site, bacterial contamination of anesthetic cartridges and proper sterilization of syringes and needles. Glasser[42] presented information on the various aspects of bacteriologic control in root canal therapy.

IMMUNOLOGY

In regard to immunology, few papers were available during this period. Sims[43] investigated the observations of previous workers (Hall and Howell), that the serum Veillonella agglutinin titer and resistance to periodontal disease were directly related; however, they were unable to substantiate this claim. The author suggests that studies of this nature with other groups of oral microorganisms may be of value in periodontal disease studies.

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1. Richardson, R. L., and Jones, M. Bacteriologic census of human saliva. J. D. Res. 37:697 Aug. 1958.

2. Bartels, H. A.; Blechman, H., and Cavallaro, J. The inhibitory action of saliva on the in vitro growth of beta hemolytic streptococci. J. D. Res. 37:654 Aug. 1958.

3. Nevin, T. A.; Appleman, M. D., and Kurtz, H. M. The availability of certain streptococcal growth factors in human saliva. J. D. Res. 37:527 June 1958.

4. Nevin, T. A.; Appleman, M. D., and Kurtz, H. M. The availability of bacterial growth factors in human gingival tissues. J. D. Res. 37:427 June 1958.

5. Boyd, W. S., and Rosenthal, S. L. The presence of bacteria in the healthy gingival sulcus. J. D. Res. 37:288 April 1958.

6. Leavitt, J. M.; Naidorf, I. J., and Shugaevsky, P. The bacterial flora of root canals as disclosed by a culture medium for endodontics. Oral Surg., Oral Med. & Oral Path. 11:302 March 1958.

7. Meyers, C. E.; Walter, E. L., and Green, L. B. Isolation of a bacteriophage specific for a Lactobacillus casei from human oral samples. J. D. Res. 37:175 Feb. 1958.

8. Young, G. The process of invasion and the persistence of Candida albicans injected intraperitoneally in mice. J. Infect. Dis. 102:114 March-April 1958.

9. Gilmour, M. N., and Hunter, P. A. Isolation of an oral filamentous microorganism. J. Bacteriol. 76:294 Sept. 1958.

10. Howell, A., Jr., and Rogosa, M. Isolation of Leptotrichia buccalis. J. Bacteriol. 76:330 Sept. 1958.

11. Shiota, T., and Kunkel, M. F., Jr. In vitro chemical and bacterial changes in saliva. J. D. Res. 37:780 Sept.-Oct. 1958.

12. McMillan, L.; Burrill, D. Y., and Fosdick, L. S. Some observations on the exudate from periodontal pockets. J.A.D.A. 57:484 Oct. 1958.

13. Rogosa, M., and others. Improved medium for the selective isolation of Veillonella. J. Bacteriol. 76:455 Oct. 1958.

14. Rovelstad, G. H.; Geller, J. H., and Cohen, A. H. The hyaluronidase activity of saliva. I. The determination of characteristics of hyaluronidase activity in young male adults. J. D. Res. 37:107 Feb. 1958.

15. Rovelstad, G. H.; Geller, J. H., Cohen, A. H. The hyaluronidase activity of saliva. II. The relationship of hyaluronidase activity to dental caries experience, gingivitis, and oral hygiene in young male adults. J. D. Res. 37:114 Feb. 1959.

16. Rovelstad, G. H.; Geller, J. H., and Cohen, A. H. The hyaluronidase activity of saliva. VI. Effect of antibiotic therapy on hyaluronidase activity of saliva. J. D. Res. 37:453 June 1958.

17. Dewar, M. R. Bacterial enzymes and periodontal disease. J. D. Res. 37:100 Feb. 1958.

18. Pepper, M. B., and others. Bacterial hydrolysis of chondroitin sulfate. J. D. Res. 37:623 Aug. 1958.

19. Kraus, F. W.; Perry, W. L., and Nickerson, J. F. Salivary catalase and peroxidase values in normal subjects and in persons with periodontal disease. Oral Surg., Oral Med. & Oral Path. 11:95 Jan. 1958.

20. Schultz-Haudt, S. D. Observations on the acid mucopolysaccharides of human gingiva. Odontologisk Tidskrift 66:3 Feb. 1958.

21. Thonard, J. C., and Scherp, H. W. Inhibition of collagenase by the human gingival microbiota. J. Bacteriol. 76:355 Oct. 1958.

22. Smith, L. S.; Thomassen, P. R., and Sweet, J. G. The relationship between infection and pathology in the pulp canal and periapical region. Oral Surg., Oral Med. & Oral Path. 11:1042 Sept. 1958.

23. Sims, W., and Snyder, M. L. The oral Veillonella in relation to dental caries. Brit. D. J. 104:173 Feb. 18, 1958.

24. Mahler, I. R., and Manly, R. S. Bactericidal action and glycolytic inhibition of selected chemicals tested against oral microorganisms. J.A.D.A. 56:854 June 1958.

25. Onisi, M., and Nuckolls, J. Descriptions of actinomycetes and other pleomorphic organisms recovered from pigmented carious lesions of the dentin of human teeth. Oral Surg., Oral Med. & Oral Path. 11:910 Aug. 1958.

26. Rovelstad, G. H.; Geller, J. H., and Cohen, A. H. Caries susceptibility tests, hyaluronidase activity of saliva and dental caries experience. J. D. Res. 37:306 April 1958.

27. Cohen, A. H., and Collins, A. A. Lactobacilli and Streptococcus salivarius in saliva. Austral. D. J. 3:210 Aug. 1958.

28. Rosen, S., and others. Studies on salivariadenectomized Hunt-Hoppert caries-resistant and caries-susceptible rats. I. Effect of salivariadenectomy on dental caries and several groups of oral microflora. J. D. Res. 37:824 Sept.-Oct. 1958.

29. Mandel, M.; Hood, F., and Cohen, J. R. On the apparent stimulation of Candida albicans by chlortetracycline. Antibiot. & Chemo. 8:187 April 1958.

30. Stevens, W. C., and Harrison, A. P., Jr. In vitro antibiotic sensitivity of Bacteroides and similar forms. Antibiot. & Chemo. 8:192 April 1958.

31. Holmes, P. E. B. Cervico-facial actinomycosis in relation to dental treatment. Brit. D. J. 104:314 May 1958.

32. Choukas, N. C. Actinomycosis of the mandible. Oral Surg., Oral Med. & Oral Path. 11:14 Jan. 1958.

33. Strean, L. P.; Williams, B. H., and Prichard, J. Oral herpetiform lesions treated with gamma globulin. Oral Surg., Oral Med. & Oral Path. 11:266 March 1958.

34. Rubbo, S. D.; Reich, J., and Dixson, S. The use of a combination of neomycin, bacitracin and polymyxin in endodontia. Oral Surg., Oral Med. & Oral Path. 11:878 Aug. 1958.

35. Gurney, B. F., and others. Endodontic therapy with para-aminotoluene sulfonamide hydrochloride (Benzylog). J.A.D.A. 56:329 March 1958.

36. Brown, R.; Thomassen, P. R., and Singler, J. M. The use of novobiocin for treatment of infections of odontogenic origin. Oral Surg., Oral Med. & Oral Path. 11:598 June 1958.

37. Rosenthal, S. L. An evaluation of Kaidenol (Clorpactin). J.A.D.A. 56:692 May 1958.

38. Bennett, D. T. The contamination of anesthetic needles. J. D. Res. 37:144 Feb. 1958.

39. Bender, I. B.; Pressman, R. S., and Tashman, G. Comparative effects of local and systemic antibiotic therapy in the prevention of postextraction bacteremia. J.A.D.A. 57:54 July 1958.

40. Ingle, J. I., and Zeldow, B. J. An evaluation of mechanical instrumentation and the negative culture in endodontic therapy. J.A.D.A. 57:471 Oct. 1958.

41. Streitfield, M. M., and Zinner, D. D. Microbiologic hazards of local dental anesthesia. II. Pilot study of involuntary aspiration of bacteria into hypodermic needles and anesthetic cartridges after injection. J.A.D.A. 57:657 Nov. 1958.

42. Glasser, M. M. Bacteriologic control in endodontics. Oral Surg., Oral Med. & Oral Path. 11:1278 Nov. 1958.

43. Sims, W. A pilot study of a serologic factor in periodontal disease. Oral Surg., Oral Med. & Oral Path. 11:721 July 1958.

RECENT AND CURRENT RESEARCH IN PEDODONTICS

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Considering that the specialty of pedodontics encompassess all facets of dentistry limited to a specific age, it is quite difficult to determine objectively the limitations or scope of research activity that should be included in or excluded from a report of this type to the members of the profession. A sincere appreciation is extended to the department chairmen of the various dental schools and others who have assisted the author's endeavors in this interesting task. The observation has been made that there is a need for greater research activity in pedodontics by some of the dental schools as most of the recent contributions to research are emanating from only a limited number of sources.

A serial study conducted at the dental clinic of the University of Milan, Italy,[1] on the development of the masticatory apparatus in fetuses and newborn infants has disclosed a couple of rather interesting observations. Initially, in infants seven months of age who had been fed artificially for a period of three months there was no disturbance in the development of the masticatory apparatus. Second, normal eruption of the deciduous teeth in their correct position was observed in the majority of infants who had not been fed by breast or bottle, and who were thus without the functional stimulus which has been claimed by some essential for normal development of the masticatory apparatus.

Another interesting study conducted abroad was on the prevalence of enamel hypoplasia among children who had suffered from gastrointestinal disease at one time or another during the period from birth to two years of age.[2] Thirty-two of 141 children, 22.7 per cent, showed evidence of enamel hypoplasia. The coincidence between the assumed period of the occurrence of enamel hypoplasia and the known period of gastrointestinal disease was found in 81.2 per cent of the children examined. In a control group of 124 children, chosen at random, who had no known incidence of gastrointestinal disturbance during this period, the incidence of enamel hypoplasia was 15.3 per cent.

There are probably as many different theories on the etiology and correct mode of therapy on thumb and finger sucking as there are authors who express their views. However, it is felt that an excellent report of a study of 2,650 infants and children selected in consecutive order from a general pediatric practice was given in the May, 1958, issue of the *Journal of Pediatrics*.[3] Of the 2,650 patients utilized in the study, 1,208, or 45.6 per

cent, were thumb or finger suckers; the sex distribution was not statistically significant. Seventy-five per cent of the youngsters commenced sucking their finger during the first year. Mode of feeding, whether bottle or breast fed, did not seem to be of any significance. However, the time period required for feeding did seem to be significant. The smallest percentage of those youngsters who sucked their finger were in a group considered to be "very slow feeders," requiring 60 minutes or longer to eat. Of the "fast feeders" (30 minutes or less to feed), 45.8 per cent sucked their finger. In the group requiring 30 to 60 minutes to eat, 62.7 per cent had a finger habit. The average age at which all signs of finger sucking stopped was 3.8 years. Malocclusion occurred in 7.9 per cent of the entire group included in the study. Of these children where malocclusion occurred, 55.4 per cent had sucked their finger at some time during their life. In the group of 1,208 youngsters who were known thumb-suckers, 9.7 per cent developed malocclusion. They also found no statistically significant relation between psychological problems and thumbsucking.

It is quite interesting and significant to the members of the profession when variations were observed from basic concepts that have been accepted for years. Lynch,[4] in his study of the occlusal surface anatomy of the human deciduous molar teeth, has presented data which are not representative of that found in most text books of dental anatomy. Of the variations he observed probably the most significant is the incidence of secondary cusps: the mandibular first and second deciduous molars having three or four secondary cusps, the maxillary first molar having four or five secondary cusps, and the maxillary second molar with five or six cusps.

A biometric study[5] of the effect of premature loss of deciduous teeth on the permanent dentition disclosed several interesting points. A group of 41 children who had lost 141 deciduous teeth, either by extraction or accident, comprised the source of information. It was concluded that there was less space lost by the extraction of the first deciduous molar than by extraction of the second deciduous molar. The highest rate of space loss was observed in the upper permanent molars (between the second and third molars). This is not in accordance with previous studies disclosing the greatest loss to occur in the mandibular second deciduous molar area. No evidence was found to substantiate the theory that premature loss of deciduous teeth produces displacements of the midline or that it results in mesiopalatine rotation of the first permanent maxillary molars. It was interesting to observe that the author concluded the rate of space loss was related not to the age of the patient but to the number of years elapsing after premature loss occurred and the number of years likely to elapse before the bicuspids erupt.

The contribution of Dorothy Young[6] to the profession in providing a better understanding of ectopic eruption deserves more than a passing comment. Of 1,619 patients included in a study over a 14 year period, 52 patients exhibited 78 ectopic eruptions of the first permanent molar. The incidence of this anomaly was much greater in the maxilla than in the mandible, and there appeared to be a higher incidence of ectopic eruptions in the male sex. It was observed that 66 per cent of all ectopically erupting molars were in this locked position only temporarily and eventually jumped this locked position and erupted normally.

The subject of diet, and more specifically the correlation of fermentable carbohydrates and their relation to dental caries, is a problem of perennial interest. From a seven-day diet record of 200 children at the University of Indiana,[7] the frequency of eating was determined and the total sugar intake and the between meal sugar was calculated as to its carbohydrate equivalent in teaspoons of

sugar. The average total sugar intake was 164 teaspoons, whereas the average between meal sugar was 55 teaspoons. A slight negative relationship was obtained between the total sugar intake and the milk intake, indicating that as the milk intake tends to increase the sugar tends to decrease, and vice versa. A multiple correlation between DMFS and the total sugar and total milk intake showed a negative correlation coefficient.

There is a great deal of basic research in progress at the Isotope Laboratory at Hines Hospital,[8-13] under the guidance of Maury Massler. The utilization of radioisotopes has opened a new avenue in conducting clinical research that will contribute immeasurably to an understanding of dental materials. Perhaps one of the current projects of most interest to the specialty of pedodontics would be the investigations showing the marginal defects in amalgam fillings as revealed by radioiodine.[14] This study suggests that perhaps it might be possible to produce a better restoration if the amalgam was placed into the tooth cavity in one homogeneous mass rather than the present practice of placing it in layers.

Pulpal therapy for the deciduous and young permanent dentition continues to be one of the principal areas of research activity in pedodontics. The affect of formocresol on the dental pulp and the use of this agent in pulpotomy procedures is currently being investigated.[15,16] It will be interesting to see what the clinical and histological data will demonstrate as to the effectiveness of this agent in pulpal therapy.

Massler and Berman[17] amputated the pulps in 122 maxillary first molars in 61 male hooded rats. The medicaments used were calcium hydroxide and zinc oxide and eugenol; each medicament being placed in 61 teeth. The animals were sacrificed at intervals of 7, 14, 21 and 28 days after the operation. The observations made were that the differences in the pulpal reactions under calcium hydroxide and zinc oxide and eugenol could be observed at seven days after amputation, but by 21 days the histologic picture was approximately the same. It was concluded that calcium hydroxide was most essential to pulpal healing and bridging. However, calcium hydroxide caused a more rapid necrosis and degeneration of the superficial layer of pulp tissue and a more rapid appearance of the primary calcific bridge.

It has been felt that there is occasionally an indication for a nonvital pulpotomy procedure, that is, in a very young child, a patient who will not accept local anesthesia or where the tooth is so badly broken down that asepsis cannot be maintained. To substantiate the validity of this procedure, Wong[18] studied the effects of paraformaldehyde preparations on the periapical tissues in pulpotomy procedures on nonvital teeth. Thirty-four teeth from four rhesus monkeys, aged 18 to 30 months, were included in the study. The average length of time prior to sacrificing the animals after pulpotomy was performed was 37 to 48 days for the permanent teeth, and 9 to 84 days for the deciduous teeth. Some of the more pertinent observations made were, initially, that the pulpal tissue of both deciduous and permanent teeth have a similar reaction when they come in direct contact with the paraform paste. This was a definite inflammatory reaction, round cell infiltration, hemorrhage, mucoid and hyaline degeneration, reticular atrophy and fibrosis. Second, new bone growing into the root canal through the apical foramen was observed only in treated permanent teeth. This phenomenon was not observed in treated deciduous teeth. Third, the rate of root resorption of deciduous teeth and rate of root formation in the permanent teeth were not adversely affected. Finally, there was no internal resorption observed in any of the treated deciduous or permanent teeth.

1. Hoffer, O. Development of the masticatory apparatus in fetuses and newborn infants (Entwicklungsbezügliche Feststellungen am Kauorgan von Föten und Neugeborenen). Fortschr. Kieferorthop. 17:165 Jan. 1957.

2. Lindemann, G. Prevalence of enamel hypoplasia among children who previously had suffered from gastrointestinal disease. Odont. Tskr. 66:101-126 April 1958.

3. Traisman, A., and Traisman, H. Thumb and finger sucking: a study of 2,650 infants and children. J. Pediat. 52:566 May 1958.

4. Lynch, W. The occlusal anatomy of the human deciduous molars. M.S. thesis. University of Nebraska. Unpublished.

5. Linder-Aronson, Sten. Effect of premature loss of deciduous teeth on permanent dentition; a biometric evaluation. Svensk. Tandlak. Tsk. 51:255 May 15, 1958.

6. Young, D. Ectopic eruption of the first permanent molar. J. Den. Children 24:153 Third Quart. 1957.

7. McDonald, R., and Zita, A. Dietary habits and the dental caries experience in 200 children. Submitted to J. D. Res. Unpublished.

8. Massler, M.; Dute, R., and Going, R. The nature of marginal defects around dental restorations as revealed by radioisotopes and dyes. Investigation in progress at Hines Isotope Laboratory, Chicago.

9. Massler, M.; Dute, R., and Going, R. Permeability and chemical reactivity of various filling materials to different radioisotopes. Investigation in progress at Hines Isotope Laboratory, Chicago.

10. Massler, M.; Dute, R., and Going, R. The effect of liners and bases placed under amalgam fillings. Investigation in progress at Hines Isotope Laboratory, Chicago.

11. Massler, M.; Dute, R., and Going, R. Surface charge on intact and injured enamel, dentin and cementum as revealed by radioisotopes. Analysis completed, manuscript in preparation at Hines Isotope Laboratory, Chicago.

12. Massler, M.; Dute, R., and Going, R. Penetration of I^{131} around and into various filling materials. Abstract presented before International Association for Dental Research, March 20, 1958.

13. Massler, M.; Dute, R., and Going, R. Effects of various agents on the permeability of freshly cut dentin. Investigation in progress at Hines Hospital, Chicago.

14. Massler, M.; Dute, R., and Going, R. Marginal defects in amalgam fillings as revealed by radioiodine. Investigation in progress.

15. Law, D. Formocreosol action on the human dental pulp. Investigation in progress at University of Washington.

16. Law, D. Formocreosol pulpotomies. Investigation in progress at University of Washington.

17. Berman, D., and Massler, M. Experimental pulpotomies in rat molars. J. D. Res. 37:229 April 1958.

18. Wong, Ka Chor. Effects of paraformaldehyde preparation on the periapical tissues in nonvital pulpotomy procedures. M.S.D. thesis. Northwestern University, 1958.

STUDIES IN DENTAL RADIOLOGY

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In keeping pace with the demands of the atomic age, a rapid expansion has occurred within the field of dental roentgenology. The term "dental radiology" now more aptly describes this field wherein major emphasis has been placed upon radiation hazards and radioisotope research in addition to the conventional areas of roentgenographic technics and interpretation. Such a natural classification lends itself to a review of studies in radiology encompassing these three areas.

The problem of radiation hazards and methods for their reduction continued to play a prominent role in 1958, as evidenced by the publication of more than 65 papers and reports in this field in English language dental journals.[1-25]

A comprehensive report on recommendations for x-ray protection in the dental office by the American Academy of Oral Roentgenology included a careful analysis of the characteristics of the more commonly used dental x-ray machines and suggestions for the collimation and filtration of specific brands of machines in order to reduce radiation. Four appendixes to the paper listed suppliers of film badge services, ionization chamber dosimeters, replacement timers and barrier materials.[1]

Additional practical information on the control of radiation hazards was supplied in a manual published under the co-sponsorship of The American College of Radiology and the American Dental Association. The section on dental radiography listed a number of practical methods for insuring good radiation hygiene in the dental office, including

proper diaphragming and filtration, use of fast films and emphasis on special care with children and pregnant women.[2]

Eselman[3] amplified these basic recommendations by suggesting that all dentists utilize lead screens or wear lead aprons to protect their own gonads and that patients 30 years or younger be draped with a lead apron. Paul[4] stressed the inadvisability of the dentist using a conventional x-ray film packet in lieu of a dosimetric film badge as a method of recording personal exposures. He also noted that the plastic cone on the x-ray machine serves merely as a pointer and offers no protection from radiation. Lee[5] advocated the copper-aluminum filtration method of Yale and Goodman[6] to achieve maximum protection in 65 kvp machines. In his paper, Sinclair[7] decried the use of hand-held fluoroscopic screens. The author paid particular attention to the fact that repeated exposures should not be made on a single patient in the perfection of a new roentgenographic technic. It was suggested that such trials be conducted on phantom material. Using 90 kvp technics and fast film, Greene[12] reported that it was possible to make a 14-film intraoral examination with fewer milliampere seconds (13 to 20) than were used for a single lower incisor roentgenogram with an intermediate speed x-ray film.

In an editorial, Morrey[13] stated that proper utilization by the profession of modern technics and equipment would assure safe standards for dental roentgenography.

With reference to the problem of gonadal dose, Hodges[14] reported that "diagnostic radiology, even as it is being practiced today by qualified radiologists, is not contributing 30-year gonadal doses that are significant relative to background [radiation]."

In separate papers, both Richards[15] and Eselman[3] proposed laboratory evidence to substantiate Hodges' claims. Richards[15] measured gonadal dose in adult males incident to complete intraoral roentgenography. In one of his groups receiving 23.8 r to the face during this procedure, 2.14 mr. or 1/10,000 of the face dose was recorded at the gonads.

In a similar experiment, Eselman[3] calculated from his own data that operating at a 27 r to the face level, a dentist would be required to make in excess of 3,000 14-film intraoral surveys per individual patient in order to give a total of 10 roentgen units to the region of the testicles in the first 30 years of life. (Reviewer's note: Inasmuch as the dental contribution to the 10 r gonadal dose suggested by the National Academy of Sciences is estimated to be about 1 r, the 3,000 full-mouth survey figure should also be reduced by a factor of 10.)

There was an increasing emphasis on radiation regulation legislation for the health sciences and industry.[16-19]

An article titled "Dental societies and radiation hygiene," appearing in both THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION[20] and the JOURNAL OF ORAL SURGERY,[21] attested to the high degree of cooperation existing between local dental societies and their respective municipal departments of health when voluntary programs for radiation reduction were organized.

A survey of 115 dental units, under the auspices of the Omaha District Dental Society, included a physical check of the dental x-ray machines in the Omaha area, measurements of leakage radiation from these machines and provision of educational material to the dentists.[22] Basic recommendations for reduction of radiation were made, including proper collimation and addition of filtration.

Ershoff and Bavetta[23] studied the effect of prenatal irradiation of pregnant rats on the incidence and severity of dental caries in the offspring. In a series of these offspring fed a cariogenic diet there was a considerable increase in the severity of dental caries, but no significant change in caries incidence when the experimental

group was compared with a group of controls.

Steadman, Brudevold and Smith[24] investigated the distribution of strontium in human teeth collected from different geographic areas. They found a similarity in the concentration of strontium in the enamel and dentin of the same tooth. With the comment that strontium is deposited primarily before eruption, the authors concluded that children are likely to have heavy depositions of strontium[90] in their teeth should atomic fallout occur.

On the basis of a study measuring radiation from disregarded sources such as cooking utensils, granite, food, water, soil, plants and animals disclosing amounts up to ten times that of natural background, Spies and Spies[25] postulated that such sources may contribute to the etiology of leukemia in man.

Although a relatively small number of papers on dental use of radioisotopes were published in 1958, these papers reflected a broader diversification within this field of dental radiology.

Spangenberg and Pool[26] conducted an experimental study on the utilization of radioactive isotopes as an energy source for clinical roentgenography. Although they reported that no single low energy, high intensity source was presently available for ideal roentgenographic purposes, the authors were able to produce roentgenograms of an acceptable quality with a cerium[144] -praseodymium[144] source.

Yen and his co-workers[27] described a selective grinding method for sampling specific areas of bones and teeth of rhesus monkeys and rats injected with the radioisotopes of phosphorus and sodium. The investigators reported that such a technic amplifies the usual roentgenographic and specific activity methods of evaluation by providing a more quantitative criterion for assessing the uptake and distribution of radioactive tracers in bone and hard tissues of the teeth.

In discussing the use of radioactive isotopes in the diagnosis of oral tumors, Doering[28] indicated that following the discovery of the deviation of phosphorus and protein metabolism in tumor tissues, isotopes of phosphorus and tagged albumin have been used for the diagnosis of oral malignancies. He stated that previously injected beta emitters may be picked up with a Geiger counter held near the surface of the tissue, while gamma emitters may be located with a scintiscanner, which in turn produces a graphic image of the lesion on a scintigram.

In a number of papers, modifications and re-evaluations of roentgenographic technics were reported.[29-33]

Harding[29] described a double cone position—double exposure technic for intraoral roentgenography to determine the buccolingual position of impacted teeth and embedded root fragments. The author's method was predicated on the premise that an object close to the film would cast overlapping shadows, whereas an object more distant from the film would record a more widely displaced pair of images.

Budowsky and his co-workers[31] attempted to compare the relative advantages between the long cone (paralleling) and the short cone (bisecting) technics for intraoral roentgenography. Four panelists, not associated with the research team, evaluated paired roentgenograms of 126 patients. It was concluded that there were no demonstrable differences in diagnostic value between roentgenograms produced by the two technics.

Freese[32] described a technic for temporomandibular joint roentgenography modifying Updegrave's original approach. Utilization of a long cone improved the diagnostic detail of the roentgenogram and considerably reduced radiation exposure.

By using sedation and specially designed cephalometric equipment, Pruzansky and Lis[33] were able to make accurate cephalometric roentgenograms of infants and small children. The authors

investigated the theory and practice of secobarbital sedation for this age group. The rest position as recorded in the sedated infant was constant when compared with the rest position recorded with conventional cephalograms on the same child at a later age.

In evaluating the reliability of cephalometric measurement, Hatton and Grainger[34] stated that "the technical process is highly refined and no practical improvement is needed." Their evaluation was based on the computation of error variances involved in the roentgenographic and tracing technics with data derived from duplicate roentgenograms and tracings of 15 three year old children.

The role of roentgenographic interpretation in oral diagnosis was discussed by a number of authors.[35-40]

Elfenbaum[35] described changes in the lamina dura influenced by a variety of local and systemic factors. He stated that the lamina dura may be employed as a possible indicator of the patient's general health status.

In studying blocks of human jaws, Applebaum[36] used Grenz-ray pictures as an intermediary between conventional roentgenography and histologic examination. He reported that variations in the radiopacity of histologic structures in teeth and alveolar and supporting bone are more definitive in Grenz-ray pictures than in companion clinical roentgenograms.

Friedman[37] conducted a clinical and roentgenographic study of reattachment after periodontal therapy. He indicated that reattachment can be evaluated best by a combination of clinical and roentgenographic assessments. He further stated that evidence of reattachment suggested by roentgenographic examination alone is not acceptable. (Reviewer's note: Dr. Friedman presented an excellent analysis of the relationship between histologic, clinical and roentgenographic findings in reattachment. However, it should be pointed out that inasmuch as the pretreatment and posttreatment roentgenograms of his cases cannot be superimposed, conclusions based on the comparisons between these roentgenograms are not valid.)

Fink and Schmidt[39] utilized bitewing roentgenography in a series of male patients ranging in age from 18 to 38 to determine the incidence of proximal caries unrecognized by routine clinical examination. The bitewing examinations revealed proximal caries in 55.6 per cent of the sampling, although these men were in an age group of so-called decreased caries susceptibility.

Blum[40] re-emphasized the thesis that the roentgenographic examination has certain well-defined limitations and that it is often necessary to utilize the pulp tester and other diagnostic aids to augment the roentgenographic examination.

In a comprehensive report on the sex differences in tooth calcification, Garn and his co-workers[41] studied a total of 255 native-born white children, using serial oblique roentgenograms. They described and evaluated five stages of calcification beginning with the full follicle (immediately preceding the first evidence of cusp calcification) through apical closure in all mandibular molars and bicuspids. The authors concluded that girls tended to be advanced in calcification over boys by 3 per cent and that the sex differences observed were of the same order of magnitude of those known to exist for tooth eruption.

In comparing the number of publications in the field of dental radiology in 1958 with those of the three preceding years, there is a noticeable increase in publications on radiation hazards and a decrease and leveling off of papers on radioisotope studies. The number of papers written on technics and interpretation was generally consistent for the four year period.

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1. Richards, A. G., and others. X-ray protection in the dental office. J.A.D.A. 56:514 April 1958.

2. Chamberlain, R. H., and Nelsen, R. J. A practical manual on the medical and dental use of x-rays with control of radiation hazards. Sponsored by The American College of Radiology and the American Dental Association. Chicago, American College of Radiology. 1958.

3. Eselman, J. C. Radiation intimidation—true or false. Pennsylvania D. J. 25:18 Jan. 1958.

4. Paul, I. R. Is our x-ray machine a hazard? Oral Surg., Oral Med. & Oral Path. 11:282 March 1958.

5. Lee, E. A. Some radiation hazards of dental x-ray and their elimination. Bul. Monmouth Co. D. Soc. 11 (no paging) March 1958.

6. Yale, S. H., and Goodman, L. S. Reduction of radiation output of the standard dental x-ray machine utilizing copper for external filtration. J.A.D.A. 54:354 March 1957.

7. Sinclair, W. K. X-radiation and protection in dental radiography. J. Am. Col. Den. 25:26 March 1958.

8. Kelly, J. F., Jr. X-rays—medical and dental use with control of radiation hazards. Chron. Omaha Dist. D. Soc. 22:14 Sept. 1958.

9. Miller, S. L. Dental x-ray filtration. J. Alabama D. A. 42:14 Oct. 1958.

10. Peters, H. A. Biological effects of radiation. Chron. Omaha Dist. D. Soc. 22:18 Sept. 1958.

11. Peters, H. A. Specific protective measures for dental x-rays. Chron. Omaha Dist. D. Soc. 22:80 Nov. 1958.

12. Greene, J. H. X-radiation reduction with 90 KVP technics. D. Radiog. & Photog. 31:36, No. 2, 1958.

13. Editorial. Safety of dental radiography assured by modern technics and equipment. J.A.D.A. 56:113 Jan. 1958.

14. Hodges, P. C. Health hazards in the diagnostic use of x-ray. J.A.M.A. 166:577 Feb. 8, 1958.

15. Richards, A. G. Roentgen-ray doses in dental radiography. J.A.D.A. 56:351-368 March 1958.

16. X-ray violations to be vigorously enforced (Pennsylvania). Pennsylvania D. J. 25:19 March 1958.

17. Radiation regulations are adopted by state (Michigan). J. Michigan D. A. 40:57 March 1958.

18. Baumgartner, Leona. Health Commissioner describes new radiological health program. (New York City) Bul. 2nd Dist. D. Soc. (N.Y.) 44:10 May 1958.

19. Changes and amendments to radiation protection regulation 433 as approved by the advisory health board. Bul. Philadelphia Co. D. Soc. 22:83 Jan. 1958.

20. American Dental Association, Council on Dental Research. Dental societies and radiation hygiene. J.A.D.A. 56:580 April 1958.

21. American Dental Association, Council on Dental Research. Dental societies and radiation hygiene. J. Oral Surg. 16:258 May 1958.

22. Summary of Omaha District Dental Society X-ray Survey. Chron. Omaha Dist. D. Soc. 22:78 Nov. 1958.

23. Ershoff, B. H., and Bavetta, L. H. Potentiating effects of prenatal x-irradiation on dental caries in the rat. Proc. Soc. Exper. Biol. & Med. 97:202 Jan. 1958.

24. Steadman, L. T.; Brudevold, F., and Smith, F. A. Distribution of strontium in teeth from different geographic areas. J.A.D.A. 57:430 Sept. 1958.

25. Spies, J. W., and Spies, W. D. Disregarded radiation sources as possible health hazards: 1. Leukemia. J. Oklahoma D. A. 47:3 April 1958.

26. Spangenberg, H. D., Jr., and Pool, M. L. Production of clinical roentgenograms by means of compact x-ray and gamma ray sources. J. D. Res. 37:920 Sept.-Oct. 1958.

27. Yen, Peter K. J., and others. Topographic sampling method for quantitative radiotracer evaluation in bones and teeth. J. D. Res. 37:458 June 1958.

28. Doering, P. Radioactive isotopes in the diagnosis of oral tumors. D. Abs. 3:567 Sept. 1958.

29. Harding, J. C. A. Depth determination by the superimposing radiographic technic. J. Kentucky D. A. 10:5 April 1958.

30. Paatero, Y. V. Pantomography of flat layers. Acta Odont. Scandinavica 16:89 May 1958.

31. Budowsky, J., and others. Effect of increasing target-film distance on intra-oral roentgenography. New York State D. J. 24:243 June-July 1958.

32. Freese, A. S. Temporomandibular joint roentgenography, an improved technique. J. Pros. Den. 8:1043 Nov.-Dec. 1958.

33. Pruzansky, S. and Lis, E. F. Cephalometric roentgenography of infants: sedation, instrumentation and research. Am. J. Orthodont. 44:159 March 1958.

34. Hatton, M. E., and Grainger, R. M. Reliability of measurements from cephalograms at the Burlington Orthodontic Research Center. J. D. Res. 37:853-859 Sept.-Oct. 1958.

35. Elfenbaum, A. Alveolar lamina dura—radiographic interpretation. D. Radiog. & Photog. 31:21 No. 2, 1958.

36. Applebaum, E. Radiographic studies of alveolar bone. New York State D. J. 37:87 Feb. 1958.

37. Friedman, N. Reattachment and roentgenograms. J. Periodont. 29:98 April 1958.

38. Mulligan, W. O. Orthodontic findings in radiographs. J. Canad. D. A. 24:340 June 1958.

39. Fink, F. S., and Schmidt, H. F. A. Evaluation of posterior bitewing roentgenograms. J.A.D.A. 56:863 June 1958.

40. Blum, T. X-ray interpretation as an aid to diagnosis. Oral Surg., Oral Med. & Oral Path. 11:403 April 1958.

41. Garn, S. M., and others. The sex difference in tooth calcification. J. D. Res. 37:561 June 1958.

Benefits of Research • Fifty years is about the average time taken for the most specialized research equipment in "pure" science to become a standard industrial tool for any branch or department of systematized knowledge and even industry. *Mitchell Wilson.*

Nothing to fear but complacency

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The American Dental Association is just one hundred years old and dentistry as a profession is but slightly older. During their first one hundred years of life, both the Association and the profession have demonstrated their ability to move forward with the growth of the nation and to keep in the forefront of changing times and scientific advances. Dentistry's progress has been so great, however, that of late years the profession has seemed to lapse into a dangerous state of complacency. And complacency spells ill for the future. For that reason I have chosen for my subject, "Nothing To Fear but Complacency."

The object of the American Dental Association as stated in the Bylaws . . . "shall be to encourage the improvement of the health of the public and promote the art and science of dentistry." The same objectives appear in either the exact or similar words in the Bylaws of the Association's constituent and component societies. It is a privilege to belong to the American Dental Association and every member should realize that this privilege —like all privileges—carries with it certain obligations. In joining the American Dental Association the member assumes an obligation to help improve the health of the public and to promote the progress of dentistry. Hence, he cannot or should not become complacent regarding the present status of the profession.

Most people tend to view things as they would like them to be, not as they really are. This is not the result of fear of reality but an inability to recognize it. This inability to visualize clearly often lulls one into a false sense of security—a position which dentistry dare not allow itself to occupy. Facing reality is not always pleasant, sometimes it is even painful but psychologists know that "facing facts" pays off in the end. I have no fear for a well-informed realistic profession, but I have great anxiety for one that is complacent and satisfied with the service it is rendering society. These are changing times. A progressive nation is constantly undergoing change and the same applies to a progressive profession. The willingness of us Americans to change our methods is one of our great national virtues. Today, as never before, the spirit of change prevails in this country. Today is a time for courage and common sense. Fear of change is the embalmer of progress.

Study, unbiased evaluation, and deliberate and firm action will enable dentistry to formulate and chart a progressive course which will be in keeping with the times and enable us and our families to lead fuller lives. The health professions, ours perhaps more than others because of our youth and adjunctive position, must act with speed and wisdom to determine the best course to be followed in light of present trends.

In my opinion, in order for dentistry to continue to improve its services to the

public, it must discard all fear of the future and bend all its efforts toward the solution of problems that now confront the profession in the following areas:

1. EDUCATION

Our schools and our postgraduate instruction are in need of an educational program that will stimulate greater interest in hospital dental service. One of the goals of the profession should be the establishment of an adequate dental department and a comprehensive dental service in all of the nation's hospitals. These departments and these services should be so well organized and so well administered that those in charge would be entitled to, and would receive, the recognition to which the heads of all hospital departments are justly entitled. I believe this goal is both worthy and practical and that it is attainable, for in my mind, the hospital of the future is destined to be the preventive health center of the community.

2. MEDICAL-SURGICAL-HOSPITAL INDEMNITY

The profession is in need of an educational program that will stimulate all dentists to take greater interest in hospital, medical and surgical indemnity plans—the so-called Blue Cross-Blue Shield programs.

3. WORKMAN'S COMPENSATION

Dentistry is in need of a program that will help members to reevaluate and recognize the importance of the inclusion of dentistry as an essential health service in the Workman's Compensation laws of all states.

4. SPECIALTIES

In light of the constant expansion of comprehensive health care programs made possible by national and state legislation, the profession must seriously reevaluate dentistry's specialty program.

5. PUBLIC AND PROFESSIONAL RELATIONS

The Association is in need of an enlarged public and professional relations program at the national level, and it must encourage and stimulate local societies to expand their activities in those fields. It is at the community level where neighbors rub shoulders with each other that public opinion is formed, and if the professional man is a good neighbor he promotes good public relations for the profession.

6. INSTITUTIONALIZED PATIENTS

Dentistry must become more concerned regarding dental service for the mentally ill and for inmates of penal institutions.

7. GERIATRICS

The profession must develop an effective dental care program for the aged.

8. RESEARCH

The profession must continue to increase its efforts on behalf of dental research. This interest should extend much deeper into the field of basic research and much deeper into clinical research as well. While dentistry can be proud of the progress that has been made in dental research during the past decade, I am confident that the next decade will be even more productive.

9. HEALTH PROGRAMS OF MANAGEMENT AND LABOR

Dentistry must give greater study to the growing number of health care programs financed by health and welfare funds of management and labor.

10. MEDICARE

The profession must shed its apathy and study earnestly the Dependent Medical Care programs—those programs by which the federal government provides health service to military dependents. The profession should also be fully informed so that it can act intelligently regarding all other health care programs sponsored and supported by the government. Should any of these plans be unworkable and impractical, it is dentistry's obligation to advise everyone involved, including their advocates, their sponsors and their recipients.

11. PREPAYMENT PROGRAMS

The profession is urgently in need of more basic information regarding prepayment dental programs.

12. PRINCIPLES OF ETHICS

Lastly, dentistry needs to make a soul-searching examination of its *Principles of Ethics* in order that all members of the profession may have a more uniform understanding of its precepts.

Space prevents a detailed discussion of all of these "Areas for Action" but I would like to discuss briefly two of them.

AREAS FOR ACTION

One area in which dentistry dare not be complacent—particularly in light of our changing national socioeconomic policy—is the back-door entrance to a complete system of nationalized health service. I refer specifically to the potential hazards embodied in the back-door entrance of health projects such as the veterans program, the Military Dependents program, health care for the aged and medical care for Social Security recipients. With respect to federal thinking regarding medical care for Social Security recipients, it may be of interest to learn that only last fall the Secretary of Health, Education and Welfare, Arthur S. Flemming, stated that although HEW had taken no position on the Forand bill, "unquestionably we will have to develop one."

Inasmuch as I have included the Veterans Administration in the afore-mentioned category and inasmuch as my comments might be misinterpreted, I wish at this time to state that in my opinion the dental department of the Veterans Administration is doing a most commendable job. Under John E. Fauber, assistant medical director, the dental service of that government agency is being administered in a sound and forthright manner, in full harmony with the human concept of the veteran's rights. I feel that I am competent to express this opinion as it is based on firsthand observation. I have been privileged for some years to serve as consultant for V.A. Area One (New York State and the New England states). In the capacity of area consultant I have learned firsthand from my frequent visits to the 32 installations in the area what the V.A. dental service stands for, what it has done, and what it is doing for the veterans. I am well pleased with the stature and prestige of V.A. dentistry. Under its present administration I see no undesirable problems in the V.A. dental department in the immediate future.

The Dependents' Medical Care program presents a more serious problem. Health care of military dependents has been a highly debatable subject for years—one in which the questionable administration of the so-called Doctor's Draft law was involved. The policy and attitudes of the American Dental Association regarding this federal program have been more tolerant than those of medicine. Whether this policy has been wise must wait the wisdom of the future. Although this newest federal health program has been in effect but a comparatively short time, it has functioned long enough, in my opinion, to indicate that those respon-

sible for the project do not propose that it be sidetracked. I am disturbed by some of the reasons furnished by federal officials for establishing the Dependents' Medical Care program such as: small financial remuneration; morale incentives; desire for dental care, and the high cost of civilian dentistry. I am alarmed further by the fact that federal officials realize that the recommendations of different state dental societies are not consistent and consequently may be disregarded and overruled by the Secretary of Defense.

This problem of Dependents' Medical Care must not be brushed off lightly. It must be given careful, detailed study in order to determine the amount of care needed, the amount of care demanded, the dental manpower available, and the cost involved. Since the problem of supplying all of the various health services stipulated in the Medicare program is complicated—one which involves both nonprofit and commercial insurance carriers; medical societies; dental societies; hospitals and the government—it can be seen readily that dentistry again finds itself involved, not only in providing the services required but in maintaining the highest type of operational relationship with the other organizations and agencies involved. Previously, I mentioned my hope that the future would bring about better hospital dental service and a more satisfactory relationship between hospital and dental services. The Medicare program is directly tied into that problem. Medicare payments to the civilian physician are generally based on treatment in hospitals. This method of payment may be satisfactory for physicians who use the hospital every day. It is not fair, however, to dentists who use the hospital facilities less frequently. Under prevailing conditions, the dental office is to the dentist what the hospital is to the physician, except, of course, that the operating cost is the responsibility of the dentist. Most dentists function best in their own offices because they are intimately familiar with their office facilities. Conversely, they are under a disadvantage in most hospitals.

Until all hospitals are equipped properly to render all types of dental service, the rendering of Medicare dental service should be elective, depending on conditions. In some instances it might be rendered best in the private office of the dentist. This is not the case under the regulations which became effective October 1, 1958. Today, permissive dental care is limited to adjunctive treatment, and basically the medical care with but few minor exceptions is limited to inpatient treatment. I anticipate that in the near future the Medicare program will be expanded—on the premise that it will boost military morale—to include office visits for illness and for dental treatment and restorative purposes. These types of services will be limited only by the appropriation which Congressmen make available. In our area of professional interest it can be visualized that this program might develop somewhat along the lines of the Veterans Administration's home-town program except that its services would not be limited to those whose difficulties are or have been service-connected. Incidentally, the V.A. home-town program has been greatly curtailed, and its fee schedule in a goodly number of instances is most unrealistic in light of present economy and the shrinking dollar.

The American Dental Association has never approved a national dental fee schedule for the Veterans Administration for the good and obvious reason that the costs of rendering dental service vary, not only from state to state but from locality to locality within many states. Through negotiations between the Association and the Veterans Administration, a definite technic was established for reviewing and changing fee allowances when indicated. Because of complacency on the part of some constituent dental societies, however, or because they have been lulled into inactivity by the fact that demands

for the service are gradually decreasing, many official V.A. dental fee schedules today are unfair and faulty. Nevertheless, since they have the apparent official approval of the Association, they are being used as a yardstick for the determination of fees by other organizations, not only by government agencies but by labor unions, management and other industrial groups. Unfortunately, this unrealistic V.A. fee schedule may be utilized in the years ahead as the baseline for the payment of dental service in an enlarged Medicare program.

The rapid changes taking place in social thinking and social planning are focussing the health professions' attention on geriatrics. Using the experience gained in Medicare programs the Department of Health, Education and Welfare might well attempt to develop an enlarged health program for the aged—one that would not only serve recipients of Social Security but self-sufficient oldsters as well.

Late last fall HEW Assistant Secretary Elliot L. Richardson reported that increasing pressure is being brought to bear on the federal government to enter the field of geriatrics. He warned "unless private, voluntary or local solutions to these and similar problems are found, the pressure for action at higher levels of government will continue to mount."

As dentists we must never forget that we do not have an unrestricted monopoly on the rendition of dental service. The right to practice dentistry is a privilege granted the dental profession by the people. And what the people give, they can take away, if our stewardship is found wanting.

The American public, including the dental profession, is fortunate in that no serious criticism can be leveled by the military, the veterans or the profession at the V.A. dental program or at the Medicare program. This favorable attitude is caused by the fact that the programs have had the benefit of intelligent guidance of understanding civic-minded governmental and civilian dental leaders. Those responsible for the V.A. dental program have recognized that it must have certain limitations in the interest of the 172,000,000 people who compose the country. Likewise, dental leaders and consultants have cooperated understandingly with the Medicare program.

Fully aware of the potentials involved, they have given the program guidance with a watchful eye. One thing seems certain: so long as cold and hot wars persist, dental care for the military and those associated with it—either as dependents or as veterans—will represent a large segment of our population. Dental service programs for these groups must be wisely handled if they are to receive the health care which society rightfully expects for them. The pattern of service for this segment of society is plain and as members of the dental profession we must be fully aware of the shape which it may take in the future, a shape which may extend to, and include, a complete government-subsidized dental program for the entire nation.

There is danger also in the extension of federal aid to health research and education, as major reliance on federal funds might readily lead to major federal control of educational and research institutions and their personnel.

Prepayment plans or programs for the financing of dental service have not been given the attention by the profession that such plans warrant. Frankly, dentistry knows very little on this subject, and most dental societies have been far too complacent and indifferent about studying it. At the Association's 90th annual session held in San Francisco in 1949, the House of Delegates unanimously urged that constituent and component societies initiate some experimental prepayment dental programs in an effort to develop some basic information regarding their administration, financing and efficiency. To date, little has been done about the matter.

Prepayment medical, surgical and hospital plans have been well established in this country during the past 20 years. According to the Health Information Foundation there were, on January 1, 1957, approximately 116 million Americans covered for hospital expense; over 101 million for surgical expense and close to 65 million for regular medical expense. Eighty-seven per cent of those covered had both hospital and surgical insurance. Undoubtedly these voluntary health insurance programs have been a major deterrent to the adoption by the nation of the undesirable government-controlled compulsory health insurance plans proposed back in the 1940s by Oscar Ewing, Senators Wagner and Murray and Representative Dingell.

The mushroom growth of medical, hospital and surgical prepaid programs has been in striking contrast to the growth of prepaid dental programs. According to the United States Public Health Service there were, on June 1, 1957, only three prepaid dental insurance plans in the United States and only two of them were licensed and operating. Those two had a most modest enrollment of less than 10,000 subscribers.

A wide difference of opinion exists among the members of the profession regarding prepayment dental programs. This difference of opinion is due partly to the fact that dental care does not lend itself as readily as medical care to the insurance principle. It is due also to the fact that so little is known about the application of the prepayment principle to dentistry that it has been impossible to include dental service in an over-all prepayment health service package.

Objection to prepayment dental plans on the part of some members of the profession may be the result of conditioning received from our medical associates. Although members of the medical profession now heartily support the principle of prepayment, they violently opposed the plan for many years after it was first proposed. Finally, some of dentistry's most sincere and ablest members seem to panic emotionally at the thought, much less the mention, of dental prepayment plans.

I have a reasonably firm conviction regarding prepayment insurance. I admit I have been criticized by some of my good friends in New York because I have supported pilot studies in this field. But I want to know, not guess. Are dental diseases insurable? Can an initial care and maintenance program be devised that will lend itself to the insurance principle? Pilot studies in this field—if they meet the standards established by the House of Delegates—should be encouraged as great, if not noble, experiments. I am proud of the First District Dental Society of New York for having the courage to sponsor the first prepayment dental insurance pilot study in the New York area. I hope to see other dental societies do likewise, and I hope some plan will be successfully developed that will enable dentists to provide service for more people under methods of their own control.

If prepayment dental plans fail, let them fail because of the inadequacies of the principle—on the basic weaknesses of the program—not because of the opposition of certain members of the profession. If prepayment dental plans must fail because of basic operational deficiencies, such failure can be turned to gain, for the profession can always say to proponents of such plans: "We have tried it—we had the courage to face the issue squarely—look at the figures—it simply doesn't work." Dentistry's obligation with respect to prepayment dental plans is clear-cut. The profession must find out whether dental service is insurable.

In any consideration of prepayment dental programs, there always arises a discussion regarding the relative merits of the open and closed panel. The American Dental Association prefers the open panel, yet it seems possible, with proper cooperation of all concerned, that both

the open panel and the closed panel could function satisfactorily in the same program. A perfect example of this is the Veterans Administration program which employs both the home-town program (open) and the Administration manned clinic (closed) program. The profession must be objective in its evaluation of open and closed panels.

The profession must be equally open-minded and practical regarding the term, "free choice." My own state of New York defines "free choice" as: "the unrestricted right of any patient to choose their own dentist, and the unrestricted right of any dentist to refuse to treat a patient." I cannot agree. This definition might have been defendable 50 years ago but not today. It implies that there is no such thing as a group dental health plan fee schedule, other than one of indemnification. Its proponents ignore changing socioeconomic conditions and established federal, state, local and industrial health programs. The American Dental Association offers a sensible definition of free choice which is applicable to the changing times. I refer to the definition adopted by the House of Delegates in 1955: "The patients must have the freedom to choose, within the agreed limitations of the plan, the dentist to whom they may wish to apply for treatment. Similarly, the dentist, within the same limitations, must have the right to accept patients who apply for treatment."

Many of us have long abhorred the third-party type of practice, one in which the dentist furnishes service to patients for a predetermined fee paid by a third party or contractor. In larger metropolitan areas, such as New York, contract practice is playing an increasingly larger role in dispensing both limited and comprehensive dental care. The profession must not be content simply to oppose these plans. It must take appropriate steps to guide them into acceptability. Dental societies should not take punitive measures to coerce their members to avoid participation in contract practice programs as, I am told, some societies now do. Some societies, it is reported, do not allow a member who is engaged in contract practice to hold office or to represent the profession at the local, state or national level. Other societies, by reversing their interpretation of the *Principles of Ethics,* have charged the offending member with violation of those *Principles.* Both technics, in view of recent court decisions, I am advised, may be in violation of restraint of trade. The use of the *Principles of Ethics* for coercive purposes is a misuse of this mechanism and a poor substitute for proper administration and an adequate society program. The Judicial Council of the American Dental Association, after giving this aspect of the *Principles of Ethics* considerable study, reported to the 1957 House of Delegates as follows:

> Section 17. Contract Practice: 1. The practice of dentistry under contract with, or an employee of, a cooperative health plan is not of itself unethical. The cooperative's efforts to promote its dental benefits to the public, however, may involve participating dentists in unethical conduct.

To practice dentistry full time or part time on a salary or to engage in private practice on a fee for service basis are ways of life—to be chosen by each individual. Can we with any degree of right legislate the way of life? Let us think carefully and rightly—before we act wrongly in this matter.

CONCLUSIONS

The many and varied problems facing dentistry which have been highlighted in this paper indicate that what dentistry needs most in these changing times is a greater understanding of and greater participation in public and professional relations. The problems of our professional associates—dentists, legislators, physicians and other health workers—sooner or later become our problems as well. Pro-

ple everywhere in this country, including dentists, should be free to determine, within legal limits, their own way of life. This is a high American standard and as a nation we proudly uphold it. Dentists, as substantial citizens, must therefore take an increased interest in community affairs, and we must stimulate our professional organizations to improve dentistry's public and professional relations.

I agree with Franklin D. Roosevelt that the most important of the Four Freedoms is the Freedom from Fear. I also believe that dentistry's chief enemy in these changing times is complacency. We as dentists are no different than our fellow men. We have the human weakness of resisting change. We are too apt to prefer the comforts built on past performance to the rugged, rough road of future progress.

I would like to close with an item of history. In 1776 the Continental Congress, meeting in Philadelphia, adopted the Declaration of Independence recording the freedom of the new world. Fifty-six American patriots, on freedom's altar, pledged in the words of Thomas Jefferson ". . . our lives, our fortunes and our sacred honor" to make government by the people a reality. Their action also made each American citizen accountable for the continuation of free government. Nowhere has the responsibility of the individual been set forth more plainly than in the words of that vigorous patriot, Theodore Roosevelt: "We are the government, you and I." You and I as individuals are responsible for the successes and failures of America and for the success of the dental profession. What we do, or fail to do, as citizens and as dentists will add up to the strength or the weaknesses of our nation and our profession.

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President, American Dental Association.

Scientific Genius and Eccentric Inventor • The line of demarcation between the rare genius and the eccentric inventor is often seemingly indistinct. To the uninitiated mind, there is much in common between crack brains and cracked brains. Yet it is important to recognize the promising basic scientist early, when he needs support for the development of his singular gifts. The nation's culture, health and strength depend primarily upon its creative basic scientists—the "eggheads." . . . We can no longer afford to allow scientific genius to remain idle for want of money. Nor can we afford to concentrate all our attention upon the physical sciences because of Sputnik. Nuclear war may or may not come, but the war against disease and death from "natural sources" is on now. *Hans Selye. What Makes Basic Research Basic? The Saturday Evening Post, January 24, 1959.*

Reaction of the human pulp to cavity preparation: results produced by eight different operative grinding technics

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This study was undertaken to determine which operative technics permitted cavity preparation with minimal pulpal reaction. Factors studied were speed, cutting tool, coolant and load. The value of coolants becomes more significant at the higher speeds. In the absence of adequate coolants, intermittent grinding is of no appreciable benefit. Preparation time at the higher speeds is of little consequence provided frictional heat is controlled by coolants. The combination of high speed, controlled temperature and light load is conducive to minimal pathological alterations in the pulp.

In the words of Shroff[1] "as professed practitioners of a healing art, it should not be our modus operandi to replace the injury initiated by disease by another, perhaps more severe, resulting from our curative and restorative efforts." For several years we have been investigating the reaction of the human pulp to cavity preparation,[2-4] utilizing various speeds, cutting tools, and coolants to determine which combination of factors approaches the ideal method—a technic permitting cavity preparation with minimal pulpal reaction. To paraphrase Seelig,[5] a pulp study does not teach what reaction to expect in any specific instance. It tells merely the relative irritational qualities of the various operating combinations of factors. At best the experiment shows the operator with which instruments or combinations he must be careful.

The technics studied are listed in Table 1. The speeds ranged from 6,000 rpm when the conventional ball-bearing handpiece was used to over 200,000 rpm when the turbine principle was employed. The cutting instruments consisted of no. 37 diamond inverted cone stones (diameter 1.5 mm.), no. 36 diamond inverted cone stones (diameter 1.3 mm.), and no. 35 inverted cone carbide burs (diameter 0.9 mm.) with smooth and conventional grips. Coolants, when employed, consisted of either air-water spray, water, or an air jet. Where feasible, every attempt was made to fulfill the requirements of an ideal pulpal study as defined by Shroff.[6]

METHOD

In order to establish a base line for comparative studies, the preparations were cut on intact (sound) teeth. They were classified in categories according to speed,

Table 1 • Technics studied

Speed (rpm)	Cutting instrument (inverted cone)	Diameter (mm.)	Linear surface feet/minute	Load (ounces)	Coolant (approximate) (cc./min.H_2O)	Average tooth size (mm.)	Average* preparation time (sec.)
6,000	No. 37 diamond stone	1.5	93.0	16–24	Air-water spray (22 cc./min.)	3.16	43.3
6,000	No. 37 diamond stone	1.5	93.0	16–24	None	2.86	46.4
20,000	No. 37 diamond stone	1.5	309.0	8–14	Air-water spray (22 cc./min.)	3.02	30.6
20,000	No. 37 diamond stone	1.5	309.0	8–14	None	3.09	47.1
50,000 (water turbine)	No. 36 diamond stone	1.3	670.0	4–10	Water (75 cc./min.)	2.85	33.3
150,000 (belt driven)	No. 35 carbide bur	0.9	1,391.4	2–4	Air-water spray (18 cc./min.)	2.33	15.9
200,000 (air turbine)	No. 35 carbide bur	0.9	1,855.0	1–3	Water + air spray (35 cc./min.)	2.78	19.8
200,000 (air turbine)	No. 35 carbide bur	0.9	1,855.0	1–3	Air-jet	2.62	22.5

*Includes "less than one hour" specimens

type of handpiece, and coolant utilized. The selected patients had more than 450 noncarious, noninfected vital teeth to be extracted for prosthetic and periodontal reasons. Attention is called to the fact that the results of this study will be exaggerated somewhat as compared with the results when similar clinical procedures are carried out on carious teeth. Secondary dentin, usually found beneath dentinal tubules involved by caries, apparently protects the pulp from the full effect of the operative trauma. However, the cutting of fresh uninvolved tubules, when extending a cavity preparation or preparing sound teeth for a prosthesis, would simulate the methods of this study (Shroff,[1] Seelig,[5] and Fish[7]). Anderson and Van Praagh[8] have suggested that although the pulp is not always damaged by use of the bur, the conditions most likely to lead to excessive heating and to damage are those in which relatively sound tissue has to be removed.

Typical Class V cavity preparations were cut in the gingival regions of the facial surfaces of all the teeth with continuous grinding when coolants were employed and with intermittent grinding when no coolants or the air jet was used. Intermittent application of the bur or stone may not have been necessary, in view of the findings of Anderson and Van Praagh[8] and Peyton.[9] It was hoped that this method might allow the temperature of the bur to fall sufficiently to keep the temperature of the pulp within a physiologically safe limit. The depth and outline form were similar for each morphological type of tooth as dictated by clinical experience.

The teeth were prepared under local anesthesia, the mandibular teeth by block anesthesia and the maxillary teeth by local infiltration. The handpieces of the belt-driven instruments were kept at constant speeds which were checked frequently with a tachometer before and after each group of preparations was completed. Estimated speeds of the turbine equipment were obtained from the manufacturer. In an attempt to standardize the operative procedure, one operator performed all the clinical work. A postal scale was employed frequently during cavity preparation to measure the ap-

proximate load on the cutting tool. All preparation times were electronically recorded. When no spray was used, the preparations were flushed with water several times during the procedure in order to remove debris. The preparations were finally air-dried and filled with zinc-oxide and eugenol. The teeth were removed under general anesthesia at intervals of less than one hour to 132 days in all categories except the 20,000 rpm, no. 37 diamond one, when local anesthesia was used. Extraction was performed by surgical excision (buccal flap), with careful application of the forceps to the root. Before fixing the specimens in 10 per cent Formalin, the fillings were removed and the root tips clipped. After decalcification in 5 per cent formic acid, the specimens were washed, dehydrated, embedded in paraffin, and serially sectioned at 6 microns. Alternate sections were stained with hematoxylin and eosin.

Clinical and Histopathological Criteria • An investigator can bias the results of an operative technic unintentionally by having in a category a preponderance of specimens with large or small average thicknesses of remaining dentin or excess numbers of anterior, posterior, young, or old teeth. Consequently, the operator has to work with ranges and averages to test the material and be certain that comparable conditions exist, not favoring one technic over another.

Age of Patients • Although the patients ranged in age from 25 to 58 years (Table 2) the average age in each category was fairly similar (36.9-41.0), a spread of less than five years.

Time Intervals • The length of the experiments varied from 44 to 132 days. Originally a 50 day cut-off point was studied to see if a more uniform time period might affect the over-all picture. Since this was not the case, Table 2 presents the results for the entire span of each experiment. Specimens extracted within an hour after cavity preparation were not included in Table 2 because such a short time interval is not adequate for the full potential of the lesion to develop. The findings in the "less than one hour" specimens will be evaluated separately.

Tooth Size • Since the study involved buccal or labial preparations, the most logical approach to test for comparable groups was to classify the teeth by the greatest measurement of the labiolingual or buccolingual diameter of the crown, a measurement found in Black's text.[10] The teeth were grouped and coded one to five, according to the increasing average size of this measurement: Maxillary lateral and mandibular central incisors, 1; maxillary central and mandibular lateral incisors, 2; all cuspids, 3; all bicuspids, 4; all molars, 5.

Table 2 shows that the average tooth size value, when rounded off to the nearest whole number, is 3.00 except in the 150,000 rpm, no. 35 carbide category.

Thickness of Remaining Dentin (Shroff's[1] "Effective Depth") • The amount of remaining dentin between the floor of the cavity and the pulp is an extremely critical factor in determining the severity and incidence of pulpal lesions. Shroff[1] and Swerdlow and Stanley[2,3] have shown that tenths of millimeters can change greatly the outcome of an experiment. This measurement, made with a micrometer ocular, is of much more consequence than the clinical depth of the cavity. On large teeth the cavities might be deeper, yet the floor of the cavities remain further from the pulp than on smaller teeth with preparations that are clinically shallower. All specimens with a remaining dentin thickness greater than 2.00 mm. were eliminated from this report because very little if any response can be found if there is this much protective dentin, except

Table 2 • Results

Speed (rpm)	6,000	6,000	20,000	20,000	50,000	150,000	200,000	200,000
Coolant	Air-water spray	None	Air-water spray	None	Water	Air-water spray	Air-water spray	Air-jet
Length of experiment (days)	71	71	44	44	93	132	89	44
No. of specimens	32	27	31	30	75	53	96	22
Number of patients	8	8	7	8	11	8	21	9
Age range (years)	27–58	27–58	27–47	27–55	25–55	25–45	25–51	25–50
Average age of patients (years)	39.1	39.1	38.0	40.1	41.0	36.9	37.6	37.7
Average tooth size (code)	3.16	2.85	3.02	3.09	2.85	2.33	2.78	2.62
Range of preparation time (sec.)	19–86	27–82	15–50	25–90	13–66	7–38	7–44	11–51
Average preparation time (sec.)	42.9	46.3	31.5	48.6	33.4	14.0	19.1	22.1
Range of remaining dentin (mm.)	0.15–1.80	0.45–1.65	0.3–1.80	0.23–1.95	0.23–1.95	0.23–1.65	0.15–1.95	0.18–1.53
Average remaining dentin (mm.)	0.84	0.78	0.97	0.94	1.02	0.80	0.97	0.75
"Burn" lesions (20 days or under)								
Incidence	7	5	0	14	0	0	0	3
Percentage	46.7	50.0	—	82.4	—	—	—	75.0
Average R.D.	0.80	0.60	—	0.85	—	—	—	0.40
Lesions not confined to cut tubules								
Incidence	0	17	0	19	0	0	0	8
Percentage	—	63.0	—	63.3	—	—	—	36.3
Average R.D.	—	0.69	—	0.80	—	—	—	0.52
Irregular secondary dentin (20 days or over)								
Incidence	7	16	6	9	10	9	21	11
Percentage	41.2	84.2	40.0	53.0	19.2	17.0	28.0	61.0
Average R.D.	0.72	0.74	1.01	0.71	0.91	0.59	0.91	0.81
Cellular displacement								
Incidence	16	14	18	24	8	8	17	7
Percentage	50.0	51.9	58.1	80.0	10.7	15.0	17.7	31.8
Average R.D.	0.78	0.72	0.81	0.94	0.93	0.66	0.64	0.52
Average intensity for all specimens	0.88	0.89	1.03	1.90	0.17	0.27	0.27	0.50
Cellular exudate								
Incidence	22	18	24	28	27	12	28	9
Percentage	68.8	66.7	77.4	93.3	36.0	22.6	29.1	41.0
Average R.D.	0.76	0.74	0.90	0.90	1.04	0.64	0.88	0.58
Average intensity of superficial exudates for all specimens	1.00	0.82	1.23	1.73	0.19	0.25	0.29	0.64
Average intensity of deep exudate for all specimens	0.84	0.82	1.13	1.50	0.37	0.35	0.32	0.50
Delayed healing and abscess formation								
Incidence	5(1A)*	4(1A)	3	8(3A)	0	2	2	2(1A)
Percentage	15.6	14.8	9.7	26.6	—	3.8	2.1	9.1
Average R.D.	0.69	0.60	0.70	0.61	—	0.23	0.51	0.41

*Abscess formation.

when extremely traumatic technics have been used. The lack of uniformity of the average remaining dentin as shown in Table 2 must be taken into consideration in interpreting the results.

Characteristics Used for Histopathological Comparisons • Such histopathologic disturbances of the pulp as intracellular odontoblastic vacuolization, scattered focal hemorrhages, eosinophilic staining, and dilated and hyperemic capillaries, though recorded on the original charts, were not included in Table 2. Sufficient information was obtained for comparative studies with more reliable histologic entities that could be interpreted clearly from questionable pathologic alterations possibly resulting from autolytic changes, surgical trauma, local anesthesia, or processing artifacts.

The uninvolved regions of the pulp adjacent to and opposite the regions underlying the cavity preparations were utilized as histologic controls. Histopathological comparisons were made between the different categories by recording the incidence of six characteristics. The intensity of two of these characteristics was also listed according to an arbitrary scale (0,1,2,3). All specimens exhibiting less than one degree of intensity for any characteristic were coded as "O" for computations in Table 2. "Less than one" degree of intensity usually represented, at the most, one or two discernible inflammatory cells or displaced odontoblasts.

1. Specimens With "Burn" Lesions (20 days or Under) (Fig. 1) • Marsland and Shovelton[11] described lesions in teeth, prepared in the 5,000 to 15,000 rpm speed range without a coolant and extracted immediately, that had the appearance of heat fixation, or a "burned" look. They felt that the extensive heat created during cavity preparation was responsible for a very rapid fixation of the local pulp, and that once this has occurred no further change could take place. Swerdlow and Stanley[2] also described similar lesions in the specimens in the nonspray, 20,000 rpm, no. 37 diamond category in which there were a relatively bloodless field, edema, and cellular degeneration. The cut-off date of 20 days was selected because a "burn" lesion, if resolution is to occur, usually is replaced by granulation tissue after this period of time; thus the original characteristic lesion is camouflaged.

2. Specimens With Lesions Not Confined to Cut Tubules in an Occlusoapical Direction • Pulpal lesions usually are confined to the cut dentinal tubules, but

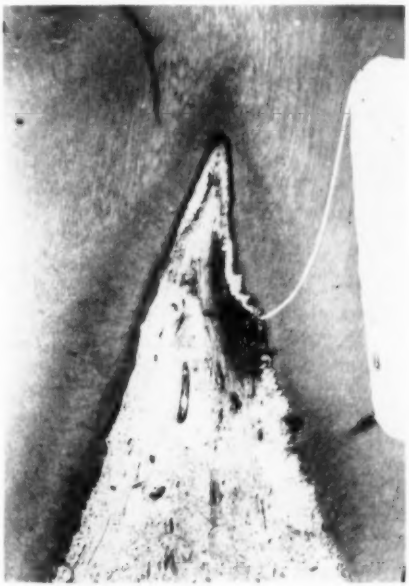

Fig. 1 • A 6,000 rpm, no. 37 diamond, no coolant, three day specimen. An example of a "burn" lesion extending beyond the cut tubules and involving the opposite pulpal surface. Pulp tissue beneath cavity preparation is devoid of recognizable histologic characteristics. Remains of odontoblastic layer can be seen on opposite pulpal surface. White line shows upper limit of cut tubules to which lesion would be confined if coolant had been employed. (R.D. 0.45 mm.)

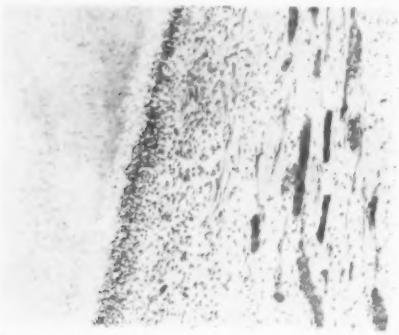

Fig. 2 • A 20,000 rpm, no. 37 diamond, air-water spray, one day specimen. A typical acute cellular inflammatory response is found in both the superficial and deep tissues. The spotted character of the dentin is due to odontoblasts and leukocytes displaced into tubules. (R.D. 0.83 mm.)

when no coolant, or an inadequate coolant, is used, this rule does not necessarily apply[2] (Fig. 1).

3. Specimens With Irregular, Secondary Dentin (20 days or Over) • The presence of irregular dentin indicates that the initial damage was great enough to injure the original odontoblasts. Healing produces less differentiated mesenchymal cells accompanying an inferior type of dentin production. Since irregular dentin is seldom found in any significant quantity under 20 days, a more accurate estimation of its incidence was obtainable with a starting date of 20 days.

4. Cellular Displacement • As previously shown[2,4] cellular displacement generally can be correlated with the degree of inflammation (Fig. 2). Since the cellular displacement of odontoblasts into the cut tubules occurs in the first 24 hours and persists well over 30 days, this provides an excellent method of detecting how acute the initial response was long after the neutrophils have degenerated and the other characteristics of acute inflammation have resolved. The intensity of cellular displacement was indicated by the number of odontoblasts found in the dentinal tubules.

5. Cellular Exudate • The cellular exudate was coded for both the superficial tissues (consisting of the odontoblastic layer, zone of Weil, and the cell rich layer) and the deeper tissues (Fig. 2). The intensity of the cellular exudate was indicated by the number of inflammatory cells that were found in the pulpal tissues.

6. Lesions of Delayed Healing and Abscess Formation • Delayed healing usually refers to older lesions that have not reached the expected degree of recovery from the time of the initial trauma (Fig. 3). Such lesions presented dense infiltrations of chronic inflammatory cells and granulation tissue. Occasionally, a massive lesion in an early time period that obviously would require extensive reparative action was also included. More of these lesions could develop into abscess formations (Fig. 4), but how often and how long a period of time would be required could not be predicted by the length of this study.

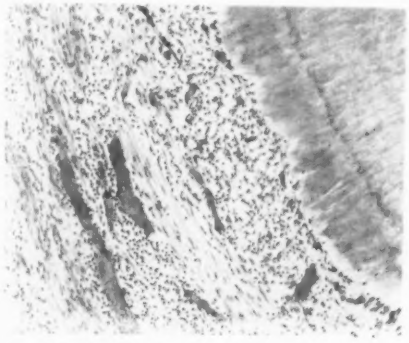

Fig. 3 • A 150,000 rpm, no. 35 carbide, air-water spray, 132 day specimen. An example of delayed healing. Regeneration is in progress with early restoration of odontoblastic layer and irregular dentin formation but an intense inflammatory infiltrate persists. (R.D. 0.23 mm.)

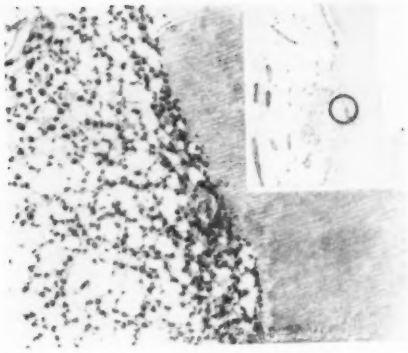

Fig. 4 • A 6,000 rpm, no. 37 diamond, air-water spray, 52 day specimen. The only example of abscess formation that occurred in this category. Enlargement reveals degenerated and necrotic tissue heavily infiltrated with leukocytes. No evidence of regeneration. Lesion is confined to cut tubules. (R.D. 0.40 mm.)

RESULTS

Preparation Time (Table 1) • As the linear surface feet per minute (LSF/m) increased, the preparation time shortened. The preparation time usually was shortened by using the air-water spray, especially at 20,000 rpm. Very little change occurred in the preparation time at 200,000 rpm by shutting off the water spray. The 150,000 rpm category not only had the shortest preparation time but also the smallest average tooth size (2.33) as compared to a 2.85 for the 50,000 rpm category and a 2.78 for the specimens in the 200,000 rpm air-water spray category.

"Less Than One Hour" Specimens • Fifty-four teeth were utilized in the "less than one hour" time period. Except for disruption of the odontoblastic layer with shallow displacement of odontoblasts into the predentin or slightly beyond, little pathologic alteration was found. These characteristics were present more often and were more conspicuous in the categories in which no coolant or an air jet was utilized. Only one specimen from the 6,000 rpm, no. 37 diamond, no coolant category had a lesion extending beyond the cut tubules with possible evidence of "burning." No inflammatory cells were found in any specimen regardless of the thickness of the remaining dentin. In the high speed categories, some specimens with as little as 0.1 mm. of dentin or only the predentin remaining for a cavity floor showed no significant pathologic alterations.

Specimens with "Burn" Lesions (20 days or Under) • Teeth in four categories revealed "burn" lesions (Fig. 1): those in which 6,000 rpm with and without a coolant, 20,000 rpm without a coolant, and 200,000 rpm with an air jet were used.

Specimens with Lesions Not Confined to the Cut Tubules • Specimens in three categories had lesions not confined to cut tubules (Fig. 1): in the categories, 6,000 rpm without a coolant, 20,000 rpm without a coolant and 200,000 rpm with an air jet. These lesions were represented by "burn" characteristics in the early periods and by irregular dentin extending beyond the cut tubules in the later periods.

Specimens with Irregular, Secondary Dentin • Irregular dentin occurred in specimens in all the categories (Fig. 3). Again the specimens in which an inadequate or no coolant was used displayed the greatest incidence of this characteristic. The incidence in specimens in the 20,000 rpm, no. 37 diamond stone, air-water spray category, even in those with the largest average remaining dentin (1.01 mm.), could not approach the low percentage of incidence seen in specimens in the high speed categories when adequate coolants were used. The incidence of irregular dentin more than doubled in the specimens in the 200,000 rpm category when air jet was substituted for the air-water spray.

Cellular Displacement • In the three higher speed categories with adequate coolants there was a very low percentage of incidence of cellular displacement in the specimens as compared with that in the lower speed categories regardless of coolant used. The percentage incidence of cellular displacement increased appreciably when the air jet replaced the air-water spray at 200,000 rpm.

Cellular Exudate • The incidence and intensity of cellular exudate paralleled closely the incidence and intensity of cellular displacement. The greatest percentage of incidence was again in the low speed—6,000 and 20,000 rpm—categories regardless of coolants utilized. The specimens in the 20,000 rpm, no. 37 diamond stone, nonspray category had the highest percentage of incidence of exudate in spite of the greatest average remaining dentin.

The average intensity of the cellular exudate in the superficial tissues for the total number of specimens was very low for the higher speeds with an adequate coolant (0.16 to 0.33) as compared with values as high as 1.73 for the specimens in the 20,000 rpm, no. 37 diamond stone, nonspray category. The average intensity of the exudate in the deep tissues followed a similar pattern.

Specimens with Delayed Healing and Abscess Formation • The incidence of delayed healing followed the trend of the other characteristics with the greatest incidence in the specimens in the 20,000 rpm, no. 37 diamond, nonspray category. Two instances occurred in both the 150,000 rpm and the 200,000 rpm, air-water spray categories, but these specimens possessed exceptionally narrow thicknesses of remaining dentin.

Abscess formations occurred in specimens in four categories—three categories where inadequate coolants were used and one with a coolant considered adequate: 6,000 rpm, air-water spray; 6,000 rpm, nonspray; 20,000 rpm, nonspray; and 200,000 rpm, air-jet. Abscess formations only occurred in specimens in those categories where "burn" lesions were found. Abscess formations, seen as early as six days, were often focal and did not necessarily indicate a rapid demise of the pulp.

Because of the rather severe inflammatory responses produced in the specimens in the 6,000 and 20,000 rpm no. 37 diamond stone categories, even when an accompanying coolant was used, the question was raised as to whether the no. 37 diamond stone might be the offending agent rather than the operating speed. Fifty-three teeth were prepared with a no. 35 carbide bur with and without an air-water spray at 6,000 and 20,000 rpm. Although the number of specimens was too few and unequally distributed to permit any elaborate comparisons, certain obvious facts were noted. Both the 6,000 and 20,000 rpm, no. 35 carbide bur, air-water spray groups resembled their no. 37 diamond stone, air-water spray counterparts in incidence and intensity of cellular exudate and odontoblastic displacement. A most peculiar finding was the resemblance of the specimens in the 6,000 and 20,000 rpm, no. 35 carbide bur, no coolant groups to the specimens in the no. 37 diamond stone, air-water spray categories. No "burns," extensive lesions or abscesses were found whether a coolant was used or not.

DISCUSSION

The finding of "burn" lesions in specimens in categories in which adequate coolants were not used is to be expected since Peyton and Henry's[12] work demonstrated that a no. 37 diamond inverted cone, cutting without a coolant and with a 0.5 pound load, produced a temperature rise of 30 to 35°F. at 5,000 rpm and 105 to 110°F. at 15,000 rpm. It can be assumed that the no. 37 diamond used

under the conditions of our study produced even greater temperature rises. However, the no. 35 carbide bur apparently did not induce such temperature increases because at neither 6,000 nor 20,000 rpm with a 1.0 to 1.5 pound load were any "burn" lesions produced even when a coolant was not used.

The finding of "burn" lesions in the specimens in the 6,000 rpm, no. 37 diamond, air-water spray category is most unexpected since in no instance did Peyton find a temperature rise greater than 20°F. when the following speeds were used: 2,500 to 15,000,[12] 20,000,[13] 30,000, and 170,000 rpm[14] with a no. 37 or no. 39 diamond stone, with a water or air-water spray, and a 0.5 pound load. Either the load of 1.0 to 1.5 pounds at 6,000 rpm in our study created too much frictional heat for the air-water spray to dissipate, or our air-water spray was not reaching the point of contact between the dentin and the cutting instrument. More water (over 22 cc. per minute) or a more effective means of cooling is needed to neutralize the greater frictional heat at this speed, load, and with this cutting instrument. At least these "burn" lesions were confined to the cut tubules which was not true in the other categories.

Anderson and Van Praagh[8] showed that if a jet of water could impinge directly on the dentin being cut, temperature rise was completely eliminated for any length of time, but if the diameter of the cavity were comparable with that of the bur, the jet of water was not as effective, since the water only cooled the upper part of the bur and not the dentin itself. When only the upper part of the bur was cooled by water, temperature rises were recorded up to 25 per cent of those obtained with no water jet. Possibly something comparable occurred here. However, Peyton[13] showed that a no. 39 diamond stone running at speeds from below 5,000 to 30,000 rpm and a 0.5 pound load produced values uniformly lower than those obtained with either carbide or steel burs, regardless of whether tested with water spray, air, or without a coolant. Our results with the no. 35 carbide bur at 6,000 and 20,000 rpm are somewhat in conflict with these latter findings of Peyton.

Any benefits from intermittent application of the cutting instruments when no coolants were used were not detectable.

The incidence of lesions extending beyond the cut tubules was very similar in the specimens in the 6,000 and 20,000 rpm categories when the no. 37 diamond stone was used without a coolant (63.0 to 63.3 per cent), but only 36.3 per cent in the 200,000 rpm, air jet category. The average remaining dentin thickness was largest in the specimens in the 20,000 rpm category and least in the specimens in the 200,000 rpm, air jet category, again indicating that the technic using 20,000 rpm and no. 37 diamond stone without a coolant was the most traumatic.

It becomes even more obvious at the higher speeds, that revolutions per minute cannot be separated from the previously mentioned combination of factors, such as type of cutting tool, coolant, and load. Any combination of factors that produces a "burn" lesion, an extensive lesion, or an intrapulpal abscess is not desirable.

The three technics using higher speed with adequate coolants produced similar results with no "burn" or extensive lesions, much less cellular displacement, and considerably less cellular exudation. Except for the danger of accidental pulp exposures due to the increased cutting efficiency, these technics can be considered biologically safe.

The substitution of the no. 35 carbide bur for the no. 37 diamond stone at 6,000 and 20,000 rpm eliminated the "burn" lesions and extensive lesions but did not appreciably reduce the quantity of cellular displacement and cellular exudate. By changing the cutting instrument

alone, the lower speeds were made somewhat more acceptable biologically but certainly not equal to the higher speeds. The presence of less pathologic alteration in the specimens was not as surprising as the apparent lack of an advantage when a coolant was used. This is contrary to the trend in the other categories and is yet to be explained.

It has been suggested that the longer the preparation time, the greater the potential pulpal damage. However, if the average preparation times of the specimens in the with-spray categories, all of similar average tooth size, are compared, it can be seen that the longer average preparation time in the 50,000 rpm category caused no more pathologic alteration in the specimens than the shorter preparation times required in the 150,000 and the 200,000 rpm categories. The specimens in the 50,000 rpm category also showed much less pathologic alteration than those in the 20,000 rpm categories with similar preparation times. Duration of actual cutting appears to be of little consequence when temperature is controlled and light load used.

This observation is in agreement with that of Anderson and Van Praagh[8] that temperature rise can be completely eliminated for any length of time if the coolant impinges directly on the dentin being cut. At 200,000 rpm, with the air jet, "burn" lesions were found in the specimens in spite of a very short average preparation time. In fact one specimen with a preparation time of only 11 seconds revealed a "burn" lesion. A "burn" lesion occurring in such a short time supports the findings of Anderson and Van Praagh[8] and Peyton and Henry[15] that the highest temperatures are reached in the first ten seconds of grinding.

Our findings agree basically with those of Walsh and Symmons,[16] Nygaard Ostby,[17] and Langeland[18] concerning the use of the air turbine instruments. However, our results show that the spent air from the turbine does not reduce the heat generated sufficiently to prevent "burn" lesions.

Marsland and Shovelton[11] felt that the excessive heat created during cavity preparation was responsible for a very rapid fixation of the focal pulp, and once having occurred, no further change could take place. Pulp tissue can be fixed by excessive heat, a recognized method of fixation, but in a living pulp these fixed tissues are soon replaced by regenerative tissues if the pulp is to survive.

Since all grinding procedures will cause varying degrees of pulpal damage, the use of the high speed instrumentation appears to be a step in the right direction. However, it should be borne in mind that there is no speed or instrument that can perform all the necessary procedures in dental practice. The size of the cutting tool and the type of operation largely determines the proper rpm. There is an essential need for lower speeds when prophylaxis angles, automatic amalgam pluggers, and surgical mallets are used.

SUMMARY

The purpose of this study was to determine which operative technics involving a combination of speed, cutting tool, coolant, and load permitted cavity preparation with minimal pulpal reaction. The speeds ranged from 6,000 rpm to over 200,000 rpm. The cutting instruments consisted of inverted cone no. 37 diamond stones, no. 36 diamond stones, and no. 35 carbide burs. The coolants accompanying the procedures were air-water spray, water, or air. Loads varied from 1 to 10 oz. with the higher speeds to 8 to 24 oz. with the low speeds.

Class V cavity preparations were cut on the facial surfaces of over 450 intact human teeth and filled with zinc-oxide and eugenol. The specimens were extracted at intervals of less than one hour to 132 days. Comparisons were made between the different technics by recording the incidence and intensity of specific his-

topathological characteristics in specimens.

Speeds of 50,000 rpm and over, with instruments utilizing the belt-driven or turbine principle, cutting with the no. 36 diamond stone and the no. 35 carbide bur, were found to be less traumatic to the human pulp than technics utilizing 6,000 and 20,000 rpm with the conventional ball-bearing handpiece and the no. 37 diamond stone and the no. 35 carbide bur. The value of coolants becomes more significant at the higher speeds. In the absence of adequate coolants, intermittent grinding is of no appreciable benefit. Preparation time at the higher speeds is of little consequence provided frictional heat is controlled by adequate coolants. The combination of high speed, controlled temperature, and light load is conducive to minimal pulpal pathologic alteration. Excessive temperature rise was apparently controlled by air-water spray and water at all speeds except at 6,000 rpm when used in combination with a no. 37 diamond stone and a load of 16 to 24 oz.

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A complete review of pertinent literature can be obtained from the authors on request.

1. Shroff, F. R. Effects of filling materials on dental pulp: an histological experimental study with special reference to synthetic porcelain. New Zealand D.J. 42:99 July; 42:145 Oct. 1946; 43:35 Jan. 1947.

2. Swerdlow, H., and Stanley, H., Jr. Reaction of human dental pulp to cavity preparation. 1. Effect of water spray at 20,000 rpm. J.A.D.A. 56:317 March 1958.

3. Swerdlow, H., and Stanley, H., Jr. Reaction of human dental pulp to cavity preparation. 2. At 150,000 rpm with air-water spray. J. Pros. Den. 9:121 Jan.-Feb. 1959.

4. Stanley, H., Jr., and Swerdlow, H. Aspiration of cells into dental tubules. Oral Surg., Oral Med. & Oral Path. 11:1007 Sept. 1958.

5. Seelig, A. Practical evaluation of histological findings of effects of filling materials upon the pulp. New York J. Den. 21:353 Oct. 1951.

6. Shroff, F. Effects of filling materials on dental pulp. A critical review. J. D. Educ. 16:246 Nov. 1952.

7. Fish, E. Experimental investigation of enamel, dentine and dental pulp. London, John Bale Sons & Danielsson, 1933.

8. Anderson, D. J., and Van Praagh, G. Preliminary investigation of temperatures produced in burring. Brit. D.J. 73:62 Aug. 1, 1942.

9. Peyton, F. A. Temperature rise and cutting efficiency of rotating instruments. New York State D.J. 18:439 Nov. 1952.

10. Black, G. V. Descriptive anatomy of the human teeth, ed. 5. Philadelphia, S. S. White Dental Manufacturing Co., 1902, p. 16-17.

11. Marsland, E. A., and Shovelton, D. S. Effect of cavity preparation on human dental pulp. Brit. D.J. 102:213 March 19, 1957.

12. Peyton, F., and Henry, E. Effect of high speed burs, diamond instruments and air abrasive in cutting tooth tissue. J.A.D.A. 49:426 Oct. 1954.

13. Peyton, F. A. Temperature rise in teeth developed by rotating instruments. J.A.D.A. 50:629 June 1955.

14. Peyton, F. Effectiveness of water coolants with rotary cutting instruments. J.A.D.A. 56:664 May 1958.

15. Peyton, F., and Henry, E. Problems of cavity preparation with modern instruments. New York J. Den. 22:147 April 1952.

16. Walsh, J. F., and Symmons, H. F. Vibration perception in teeth during cavity preparation. New Zealand D.J. 44:39 Jan. 1948.

17. Nygaard Ostby, B. Clinical and experimental experience with Borden Aerator. Norske Tannlaegeforen. Tid. 68:124 March 1958.

18. Langeland, K. Pulp reactions to high speed instrumentation. Norske Tannlaegeforen. Tid. 68:127 March 1958.

The Way of Life • Life is not the way we observe it with our eyes. It is microscopic and all its characteristic processes are on a scale which can be measured only in thousands of a millimeter. *André Mayer. Science Medicale, 1931.*

Survey of dental health of the naval recruit

I. Status of dental health

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A study of 2,027 naval recruits was undertaken to determine the dental condition of naval recruits and the factors that may have influenced this prior to entrance into the Navy. The average DMF rate was 13.9. The average recruit had 2.4 missing teeth. The mean number of carious teeth was 7.2. Only 20.8 per cent of the recruits were free from gingivitis. The state of dental health of young men reporting for military duty is deplorable. Dental caries and the consequences of the neglect of caries are the most common health problems of young adults.

The dental needs of different population groups have been studied extensively by numerous investigators. Some studies have focused attention on children,[1-8] some on the young adult[9-13] and military personnel,[14-24] whereas others have studied the adult[25,26] and the general population.[27-38]

The results of these studies indicate a high incidence of dental disease among all age groups and show that nearly everyone falls victim to some form of dental disease during his lifetime and usually at an early age. These findings further suggest that dental disease is a continuous process, frequently having its inception in early childhood and continuing throughout the life span of the individual.[3,4,8,26,29]

In children and young adults, dental caries plays a predominant role in the high incidence of dental disease.[1-5,7,8,26] Tooth loss in these persons usually occurs because of dental caries involvement.[8,25,27] After age 35 periodontal disease becomes more prominent and is said to supersede dental caries as the chief cause of teeth being extracted.[25,27,37,38]

Studies have been conducted to relate dental health to various factors which may have influenced it. These studies have suggested that the rate of dental disease may be influenced by geographic location,[9,14-17,20,29,30,31,35] age[8,9,21,23,26,27,31,36,38] and sex.[4,5,27,36,38] The state of dental health, however, has been related to these factors in addition to education,[6,32] income[6,28,30,31,33,36] availability of dentists[33,39] and frequency and recency of dental visits.[28,30,31,33]

PURPOSE AND OBJECTIVES OF STUDY

A study was undertaken at the U. S. Naval Training Center, Bainbridge, Md., in 1956 for the purpose of determining

the dental condition of naval recruits and the factors that might have influenced this prior to entrance into the Navy.

The hypothesis underlying this survey is that the state of dental health at a given time is the result of health, education, socioeconomic and personal factors influencing the type and efficiency of treatment provided to the teeth and their supporting structures during the formative years and prior to the time of examination.

Dental health or oral health is defined as a state of complete well-being of the teeth and their supporting structures and is the result of three factors:

1. The growth and development of the teeth and their supporting structures.
2. The rate of dental disease and accumulation of disease process.
3. The type and efficiency of the treatment provided to the teeth and their supporting structures during this dental disease process.

The objectives of this study were to determine the past dental health experience, home and community environment, education, economic level and state of general health for each participant and to evaluate these factors in relation to the state of dental health of each at the time of arrival at the U. S. Naval Training Center, Bainbridge, Md., before dental care had been provided by the Navy.

METHOD OF STUDY

This study was carried out by means of a series of questionnaires, tests, health examinations and dental examinations given to new naval recruits on arrival at the receiving center, U. S. Naval Training Center, Bainbridge, Md. All recruits entering the Center between July 16, 1956, and December 10, 1956, were potential sources of study. From the 15,543 recruits who entered the Center during this period, 2,089 were selected at random; 2,027 completed all phases of the survey and were the test group.

A fact-finding team consisting of one dental officer and two dental technicians made all dental examinations, supervised all survey questionnaires and recorded all data.

The source of naval recruits for the Center was the eastern third of the United States including the New England, Middle Atlantic, South Atlantic, East South Central and East North Central regions. A few recruits from areas other than those listed entered the Training Center for duty and were included as they appeared by chance in this survey group.

No screening for dental health had been effected for these recruits prior to entry into the U. S. Naval Training Center, Bainbridge, Md., and therefore there had not been a selection on the basis of dental disease. No dental health standard was required for naval recruits at the time of this survey.

A color photograph of the oral cavity of each subject selected for survey was taken with a 35 mm. clinical camera. These photographs were identified by the process number included in the field of view.[10]

On completion of the photograph, a dental examination was completed and oral condition charted. This was carried out by a member of the fact-finding team at a dental unit by means of a mouth mirror, explorer and adequate lighting supported by bitewing roentgenograms. The roentgenograms were mounted and properly illuminated and read with the aid of a 10X magnifying glass.

All data were recorded separately for third molars for each selected item.

The method of diagnosis and interpretation of these photographs was standardized. Gingivitis, oral hygiene, occlusion, enamel dystrophy and appearance of the survey subjects were rated by this means.

All data were recorded according to

Table 1 • Mean characteristics of 2,027* young male adults selected for dental health survey, U. S. Naval Training Center, Bainbridge, Md., July-December 1956

Personal and family characteristics	Group average
Recruit	
Age	18.5 years
Education	10.7 years
Income	$35.00 per week
Distance from dentist	1.8 miles
No. of brothers and sisters	2.8
Father	
Age	47 years
Income	$100.00 per week
Mother	
Age	43 years
Income	$43.50 per week

*This represents a 13 per cent sample of 15,543 U. S. naval recruits.

given definitions. After coding and recording, these data were transferred to IBM cards from which the required tabulations and summations were made.

Opinions were expressed by the subject on personal dental practices. If the subject had previously sought dental care, he was given the opportunity to express one or more reasons for doing so. Ten different reasons commonly expressed by this population group (in preliminary studies) were listed together with a space for checking "other reasons" or "don't know." Similarly, if the subject had not previously sought dental care, he was given an opportunity to check one or more of eight different reasons for not doing so. Opportunity was also given for "other reasons" and "don't know." The data for these two questions were coded singularly and in multiples.

RESULTS

Personal Characteristics • Personal characteristics of the survey group as presented are summarized in Table 1.

It will be noted that the average age for this group of naval recruits is 18.5 years.

The majority of the study group were born in the Middle Atlantic region (Pennsylvania, New Jersey and New York), this region accounting for 45.3 per cent of the total. The New England region provided 2.8 per cent of the 2,027 subjects surveyed, whereas the South Atlantic region provided 19.0 per cent subjects.

Over one half of the group came from the city.

The majority of the survey group had completed ten or more years of school, whereas only 7.5 per cent had graduated from high school. Over 63 per cent completed 11 years or more of schooling, whereas 8.5 per cent completed nine or less years of education.

Eighty-six per cent of the total group had held jobs before entering the Center, either part-time or full-time.

The average income for those that had worked was $44.80 per week. Twenty-one per cent of the 2,027 surveyed said that they had had an income of $60.00 per week or more prior to entering the Navy.

Information on family background revealed that the average age of fathers reported as living and whose ages were known was 47 years. The percentage of those fathers living at home was 79.5.

The average age of mothers reported

Table 2 • Availability of dentist* for young male adults selected for dental health survey, U. S. Naval Training Center, Bainbridge, Md., July-December 1956

Availability of dentist	Distribution	
	Frequency	Per cent
1 mile or less	1,188	58.6
2-3 miles	296	14.6
4-6 miles	209	10.3
7-9 miles	91	4.5
10-12 miles	88	4.4
13-15 miles	33	1.6
16-18 miles	39	1.9
More than 18		0.0
Don't know	49	2.4
No entry	34	1.7
Total	2,027	100.0

*Availability of dentist as recorded on questionnaire: How far was the nearest dentist to where you lived? ____.

as living and whose ages were known was 43 years. The percentage of mothers living at home was 91.9.

The number of brothers and sisters ranged from 0 to 7, with an average of 2.8 for the group. Almost 48 per cent had three or more brothers and sisters.

Over 80 per cent of the survey group were noted to be free of physical defects, a medical screening having been completed prior to arrival at Bainbridge. Almost 12 per cent had characteristics that might have made for military unsuitability, and 5.7 per cent had defects of vision according to the results of a complete medical examination.

Dental Habits • The majority of recruits studied lived a convenient distance from the dentist. Only 2.4 per cent didn't know the distance to the nearest dentist (Table 2).

It was found that 46.1 per cent of the fathers of the survey group had most of their own teeth. Those not having most of their own teeth constituted 34.9 per cent, 80 per cent of which had artificial teeth. Nine per cent of the recruits reported that they did not know the condition of their fathers' teeth (Table 3).

Table 3 • Condition of father's teeth* for young male adults selected for dental health survey, U. S. Naval Training Center, Bainbridge, Md., July-December 1956

Condition of father's teeth	Distribution	
	Frequency	Per cent
Has most of his own teeth	934	46.1
Has artificial teeth	109	5.4
Has no artificial teeth	825	40.7
Does not have most of his own teeth	707	34.9
Has artificial teeth	569	28.1
Has no artificial teeth	138	6.8
Don't know	186	9.2
No entry	200	9.8
Total	2,027	100.0

*Condition of father's teeth as recorded on questionnaire: Does he still have most of his own teeth? Yes_____ No_____ Don't know_____ Does he have false teeth? Yes_____ No_____ Don't know_____

Table 4 • Condition of mother's teeth for young male adults selected for dental health survey, U. S. Naval Training Center, Bainbridge, Md., July-December 1956

Condition of mother's teeth	Distribution	
	Frequency	Per cent
Has most of her own teeth	1,010	49.8
Has artificial teeth	180	8.9
Has no artificial teeth	830	40.9
Does not have most of her own teeth	811	40.1
Has artificial teeth	737	36.4
Has no artificial teeth	74	3.7
Don't know	120	5.9
No entry	86	4.2
Total	2,027	100.0

*Condition of mother's teeth as recorded on questionnaire: Does she still have most of her own teeth? Yes_____ No_____ Don't know_____ Does she have false teeth? Yes_____ No_____ Don't know_____

It also will be noted that 49.8 per cent of mothers of the survey group were reported to have most of their own teeth. Those reported as not having most of their own teeth amounted to 40.1 per cent, 90 per cent of which had artificial teeth. Six per cent of the recruits reported that they did not know the condition of their mothers' teeth (Table 4).

In regard to personal dental practices, more than 85 per cent of the group said that they brushed their teeth at least twice a day (Table 5). Only 3.8 per cent admitted to not brushing their teeth.

The frequency of dental appointments is shown in Table 6. Nearly one half of the group said that they sought dental treatment regularly or twice a year, whereas one fifth stated that they had "never" or "hardly ever" gone to a dentist.

The group that sought dental care was allowed to express reasons for going to the dentist. The reasons given most frequently were "toothache," "regular checkup," "teeth looked bad" and "teeth needed cleaning" (Table 7). Of those that did not go to the dentist, the reasons most frequently given were: "teeth didn't need fixing," "couldn't afford it,"

"don't know" and "didn't want teeth drilled" (Table 8). Over 50 per cent stated, however, that they had been going regularly.

Dental Characteristics • Table 9 summarizes the dental health status of the survey group as they appeared for examination.

The distribution of the number of teeth per recruit is from 0 to 32 including third molars, the average being 25.6 plus 1.1 third molars or 26.7 teeth per recruit at time of entrance into the Navy. The majority of the subjects had 26 or more teeth, although a few had no teeth at the time of enlistment. Almost half of the group had no third molars present at the time of examination because of lack of eruption. Less than one tenth of the group had all third molars present at the time of examination.

The distribution of DMF teeth per person for the survey group indicates an average DMF of 13.6 with a range from 0 to 28, plus 0.3 DMF third molars. Out of the total group surveyed, over one sixth had a DMF rate of 20 or more.

The average naval recruit was noted to have 2.4 missing teeth (lost by disease or injury) at the time of this examination. Two thirds of the group had lost one or more of their teeth prior to entering the service.

Over one third of the recruits needed to have one or more teeth extracted at the time of enlistment. The average number of teeth needing extraction was 1.4 teeth per recruit, with a range from 0 to 27.

The number of carious teeth ranged from 0 to 27 with the mean number of carious teeth being 7.0. An average of 0.2 third molars per recruit were carious.

The average number of restored teeth (filled) per recruit was 6 at the time of this examination, with a range from 0 to 27. Over one fourth of those participating had no fillings at the time of the examination. An average of 0.1 third molars per recruit had been restored.

The number of surfaces, excluding third molars, involved with carious lesions ranged from 0 to 81, with the average number of surfaces being 12.5. In addition the average number of carious surfaces on third molars was 0.4.

The average number of restored surfaces, excluding third molars, was 10.0 with a range from 0 to 59.

From Table 10 it can be noted that 7.6 per cent of the recruits had minimal lesions involving enamel only. Almost 48 per cent had lesions involving dentin, whereas 38 per cent had lesions involving possible pulp exposures.

The evaluation of occlusion carried out by the photographic examination indicated that 15.5 per cent of the survey group demonstrated gross malocclusions (Table 11). Disturbances of occlusion created by loss of permanent teeth are not included in this evaluation because of the nature of the examination.

The oral hygiene evaluation of this group showed 17.1 per cent with poor oral hygiene and 46.6 per cent with excellent hygiene at the time of this examination (Table 12).

Less than 3 per cent of the entire group had recognizable enamel dystrophy (Table 13).

Some evidence of gingival disturbance was evident in 79 per cent of the survey group. Over 22 per cent of the subjects had moderate to severe gingivitis, whereas 20.8 per cent were free from any recognizable evidence of gingivitis (Table 14).

The dental esthetics rating as determined by the examiner from the photographs demonstrated that 25.8 per cent of the survey group had disturbances of appearance that were undesirable (Table 15).

DISCUSSION

According to the findings of this survey, the state of dental health of young male

Table 5 • Frequency of brushing teeth* for young male adults selected for dental health survey, U. S. Naval Training Center, Bainbridge, Md., July-December 1956

Frequency of brushing teeth	Distribution	
	Frequency	Per cent
None	76	3.8
Once a day	191	9.4
Twice a day	949	46.8
Three times a day	689	34.0
Four times a day	98	4.9
Five or more times a day	19	0.9
No entry	5	0.2
Total	2,027	100.0

*Frequency of brushing teeth as recorded on questionnaire: How many times a day do you brush your teeth?_____ When do you brush your teeth?_____

Table 6 • Frequency of dental appointments* for young male adults selected for dental health survey, U. S. Naval Training Center, Bainbridge, Md., July-December 1956

Dental visits	Distribution	
	Frequency	Per cent
None	67	3.3
Once or "hardly ever"	365	18.0
2 times	106	5.2
3 times	86	4.2
4 times	66	3.3
5 times	35	1.7
6 times or more	159	7.8
Regularly, twice a year	1,005	49.6
Don't know	100	5.0
No entry	38	1.9
Total	2,027	100.0

*Frequency of dental appointments as recorded on questionnaire: Have you ever been to a dentist? Yes_____ No_____ How often have you gone to the dentist?_____

Table 7 • Reasons for going to dentist* for young male adults selected for dental health survey, U. S. Naval Training Center, Bainbridge, Md., July-December 1956

Reason	Distribution	
	Frequency	Per cent
Toothache	1,020	36.7
Regular check-up	455	16.4
Teeth looked bad	350	12.6
Teeth needed cleaning	326	11.7
Bad breath	154	5.5
Parents sent me	112	4.0
School dentist sent me	76	2.7
Crooked teeth	82	3.0
Bleeding gums	47	1.7
Teacher sent me	17	0.6
Don't know	8	0.3
Other	44	1.6
No entry	87	3.1
Total	2,778	100.0

*Reasons for going to dentist as recorded on questionnaire: Why did you go to the dentist? Check reasons_____

Table 8 • Reasons for not going to dentist regularly* for young male adults selected for dental health survey, U. S. Naval Training Center, Bainbridge, Md., July-December 1956

Reasons for not going to dentist	Distribution	
	Frequency	Per cent
Teeth didn't need fixing	232	22.7
Couldn't afford it	162	15.8
Don't know	161	15.7
Didn't want teeth drilled	126	12.3
Didn't have time	110	10.7
Didn't want teeth filled	74	8.2
Didn't want to lose teeth	69	6.7
Parents didn't send me	14	1.3
Other reasons	44	4.2
No entry	27	2.5
Total	1,019	100.0

*Reasons for not going to dentist as recorded on questionnaire: Have you been going to the dentist at least once a year? Yes_____ No_____ If answer is no, check one or more reasons below_____

Table 9 • Summary of dental health for young male adults, U. S. Naval Training Center, Bainbridge, Md., July-December 1956

Dental health study	Mean	Range
Number of teeth	25.6	0-28
Third molars	1.1	0-4
DMF teeth	13.6	0-28
Third molars	0.3	0-4
Missing teeth	2.4	0-28
Third molars	0.0	0-4
Teeth to be extracted	1.4	0-27
Third molars	0.0	0-4
Carious teeth	7.0	0-27
Third molars	0.2	0-4
Restored teeth	6.0	0-27
Third molars	0.1	0-4
Carious surfaces	12.5	0-81
Surfaces third molars	0.4	0-9
Restored surfaces	10.0	0-59
Surfaces third molars	0.1	0-7
Oral hygiene	1.7*	1-3
Gingivitis	1.5†	0-4
General esthetics	3.0‡	1-5

*Based on definition: 1—good, 2—fair and 3—poor.

†Based on definition: 0—no gingivitis, 1—possible gingivitis, 2—probable gingivitis, 3—moderate gingivitis and 4—severe gingivitis.

‡Based on definition: 1—excellent, 2—good, 3—fair, 4—poor and 5—very poor.

Table 10 • Distribution of young male adults by depth of carious lesions, U. S. Naval Training Center, Brainbridge, Md., July-December 1956

Depth of cavities	Distribution	
	Frequency	Per cent
None	150	7.4
One or more carious lesions involving enamel only	154	7.6
One or more carious lesions involving dentin	955	47.8
One or more carious lesions involving pulp	765	37.7
No entry	3	0.1
Total	2,027	100.0

Table 11 • Distribution of young male adults by status of occlusion, U. S. Naval Training Center, Bainbridge, Md., July-December 1956

Occlusion	Distribution	
	Frequency	Per cent
Good occlusion	1,706	84.1
Malocclusion*	313	15.5
No entry	8	0.4
Total	2,027	100.0

*Represents gross malocclusions only.

Table 12 • Distribution of young male adults by status of oral hygiene, U. S. Naval Training Center, Brainbridge, Md., July-December, 1956

Oral hygiene	Distribution	
	Frequency	Per cent
1 (Good)	944	46.6
2 (Fair)	732	36.1
3 (Poor)	346	17.1
No entry	5	0.2
Total	2,027	100.0

Table 13 • Distribution of young male adults by presence of enamel dystrophy, U. S. Naval Training Center, Bainbridge, Md., July-December 1956

Enamel dystrophy	Distribution	
	Frequency	Per cent
None	1,923	94.9
Recognized dystrophy present	61	2.8
No entry	46	2.3
Total	2,027	100.0

Table 14 • Distribution of young male adults according to presence of gingivitis, U. S. Naval Training Center, Bainbridge, Md., July-December 1956

Gingivitis	Distribution	
	Frequency	Per cent
0 (None)	422	20.8
1 (Possible)	649	32.0
2 (Probable)	496	24.5
3 (Moderate)	324	16.0
4 (Severe)	132	6.5
No entry	4	0.2
Total	2,027	100.0

Table 15 • Distribution of young male adults by general dental appearance, U. S. Naval Training Center, Bainbridge, Md., July-December 1956

General appearance	Distribution	
	Frequency	Per cent
1 (Excellent)	204	10.1
2 (Good)	349	17.2
3 (Fair)	947	46.7
4 (Poor)	300	14.8
5 (Very poor)	223	11.0
No entry	4	0.2
Total	2,027	100.0

adults as they report for military duty is deplorable on the basis of the definition of good dental health as a state of complete well-being of the teeth and their supporting structures. Although the general physical condition of the individuals in this group is at a high level (all subjects having been screened by a medical examination), the dental health as evidenced by dental caries, dental pulp disease, gingival disease, and the mutilation of the dentition or losses of permanent teeth is at a low level. The incidence of gross malocclusions and hypoplasias of tooth structures expected from growth and developmental disturbances in no way compares to the incidence of the previously mentioned conditions. These findings are consistent with numerous reports in the literature describing dental conditions of American youth, only the severity of the total dental problem at age 18 is presented in detail.

The disparity that exists between dental needs and correction is surprising in view of the opinions expressed by over half of this group that adequate and regular dental attention was being received.

There is no doubt that dental caries and the consequences of the neglect of dental caries are the underlying causes of the poor state of dental health of young adults, and there is no doubt that these are the most common health problems of young adults. It is also recognized, however, that the incidence of gingival disturbances is relatively high. The percentage of recruits with moderate to severe periodontal disease is similar to that of older age groups as reported in the literature.

A cross section of young male adults from the eastern third of the United States is presented for further study in correlation with dental findings.

SUMMARY

A group of 2,027 naval recruits were examined and subjected to questionnaires and tests on arrival at the U. S. Naval Training Center, Bainbridge, Md., between July and December 1956 before receiving any dental instruction or dental care. The results of these examinations and the data collected are summarized and reported as typical data describing the young male adult from the eastern third of the United States as he reports for military service. Base-line data are recorded for future studies designed to evaluate factors influencing the state of dental health of the young man prior to military service.

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The opinions or assertions contained in this article are the private ones of the writer and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.

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1. Klein, H.; Palmer, C. E., and Knutson, J. W. Studies on dental caries. I. Dental status and dental needs of elementary school children. Pub. Health Rep. 53:751 May 13, 1938.

2. Klein, H., and Palmer, C. E. Studies on dental caries. IX. Prevalence and incidence of dental caries experience, dental care and carious defects requiring treatment in high school children. Pub. Health Rep. 55:1258 July 12, 1940.

3. Klein, H., and Palmer, C. E. Disparity between dental need and dental care in school children of Hagerstown, Md., and environs. J.A.D.A. 28:1489 Sept. 1941.

4. Savara, B. S., and Suher, Theodore. Incidence of dental caries in children 1 to 6 years of age. J. D. Res. 33:808 Dec. 1954.

5. Savara, B. S. Incidence of dental caries, gingivitis and malocclusion in Chicago children (14 to 17 years of age). J. D. Res. 34:546 Aug. 1955.

6. Savara, B. S., and Suher, Theodore. Dental caries in children one to six years of age as related to socio-economic level, food habits, and toothbrushing. J. D. Res. 34:870 Dec. 1955.

7. Suher, T.; Dickson, J. P., and Hadjimarkos, D. M. Caries experience among institutionalized children in the Pacific Northwest. J. D. Res. 33:552 Aug. 1954.

8. Kimmelman, B. B. Analysis and interpretation of dental figures from the Pennsylvania school examinations, 1950-1951, 1951-1952. J. D. Res. 34:188 April 1955.

9. Hadjimarkos, D. M., and Storvick, C. A. Incidence of dental caries among freshmen students at Oregon State College. J. D. Res. 27:299 June 1948.

10. Jacobson, F. L.; Hard, M. M., and Esselbaugh, N. C. Dental caries experience among Washington-born and -reared freshmen students at the State College of Washington in 1950. J. D. Res. 35:132 Feb. 1956.

11. Brekhus, P. J. Report on dental caries in ten thousand four hundred and forty-five university students (1928-1930). J.A.D.A. 18:1350 July 1931.

12. Healey, H. J., and Cheyne, V. D. Comparison of caries prevalence between freshman students in two midwestern universities. J.A.D.A. 30:692 May 1943.

13. Klein, H. Dental status and dental needs of young adult males, rejectable, or acceptable for military service, according to Selective Service dental requirements. Pub. Health Rep. 56:1369 July 4, 1941.

14. Fergusen, R. A. Some observations on diet and dental disease. J.A.D.A. 22:392 March 1935.

15. Senn, W. W. Incidence of dental caries among aviation cadets. Mil. Surgeon 93:461 Dec. 1943.

16. Schlack, C. A., and Restarski, J. S. Dental status of 71,015 naval personnel at first examination in 1942, age and regional distribution of persons with specific type dental defects. Research Project X-131, Report No. 2, Naval Medical Research Institute, January 11, 1946.

17. Schlack, C. A., and Birren, J. E. Time required to treat dental defects in 71,015 naval personnel, with regional and age variations. J.A.D.A. 33:1406 Nov. 1946.

18. Massler, Maury; Ludwick, William, and Schour, Isaac. Dental caries and gingivitis in males 17 to 20 years old (at Great Lakes Naval Training Center). J. D. Res. 31:195 April 1952.

19. Ludwick, William, and Massler, Maury. Relation of dental caries experience and gingivitis to cigarette smoking in males 17 to 21 years old (at Great Lakes Naval Training Center). J. D. Res. 31:319 June 1952.

20. Massler, Maury, and Ludwick, William. Relation of dental caries experience and gingivitis to geographic location and size of community in males 17 to 21 years old (at Great Lakes Naval Training Center). J. D. Res. 31:313 June 1952.

21. Cross, J. W. Dental treatment needs of naval personnel as derived from 1570 cases. J. D. Res. 31:335 June 1952.

22. Jacobson, Marvin. Preliminary survey of periodontal disease among basic airmen. (Abst.) J. D. Res. 32:701 Oct. 1953.

23. Stahl, S. S., and Morris, A. L. Oral health conditions among Army personnel at the Army Engineer Center. J. Periodont. 26:180 July 1955.

24. Hellman, L. P.; Ludwick, William, and Oesterling, B. W. Naval dental needs and treatment. J.A.D.A. 55:828 Dec. 1957.

25. Belting, C. M.; Massler, Maury, and Schour, Isaac. Prevalence and incidence of alveolar bone disease in men. J.A.D.A. 47:190 Aug. 1953.

26. Pelton, W. J.; Pennell, E. H., and Druzina, Anton. Tooth morbidity experience of adults. J.A.D.A. 49:439 Oct. 1954.

27. Moen, B. D. Survey of needs for dental care. II. Dental needs according to age and sex of patients. J.A.D.A. 46:200 Feb. 1953.

28. Moen, B. D. Survey of needs for dental care. III. Dental needs according to length of time since last visit to a dentist. J.A.D.A. 46:562 May 1953.

29. Moen, B. D. Survey of needs for dental care. IV. Dental needs according to region of the country. J.A.D.A. 47:206 Aug. 1953.

30. Moen, B. D. Survey of needs for dental care. V. Dental needs according to income and occupation. J.A.D.A. 47:340 Sept. 1953.

31. Moen, B. D. Survey of needs for dental care. VI. Summary and comparison with 1940 survey. J.A.D.A. 47:572 Nov. 1953.

32. Moen, B. D. Family dental survey. I. Dental health concepts. J.A.D.A. 47:575 Nov. 1953.

33. Moen, B. D. Family dental survey. II. Frequency of visits to the dentist; the annual dental bill. J.A.D.A. 48:74 Jan. 1954.

34. Moen, B. D. Family dental survey. III. Dentures and bridges worn; knowledge of fluoridation; opinion of the dentist. J.A.D.A. 48:320 March 1954.

35. Dunning, J. M. Influence of latitude and distance from the seacoast on dental disease. J. D. Res. 32:811 Dec. 1953.

36. Palmer, B. B., and Moen, B. D. Dental survey of an urban, employed group. J.A.D.A. 54:56 Jan. 1957.

37. Bossert, W. A., and Marks, H. H. Prevalence and characteristics of periodontal disease in 12,800 persons under periodic dental observation. J.A.D.A. 52:429 April 1956.

38. Marshall-Day, C. D.; Stephens, R. G., and Quigley, L. F., Jr. Periodontal disease: prevalence and incidence. J. Periodont. 26:185 July 1955.

39. Pelton, W. J., and Wisan, J. M. Dentistry in public health, ed. 2. Philadelphia, W. B. Saunders Co., 1955.

40. The photographic equipment used for this study was originally designed and tested by B. L. Taylor and C. A. Schlack of the National Naval Medical Research Institute, Bethesda, Md., and further modified by H. W. Lyon as reported in Research Report, Project NM 008 012.03.04, National Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md., vol. 2, May 27, 1953, p. 693-714.

The pulpless tooth in rehabilitation of the mouth

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Mouth rehabilitation is facilitated by the use of endodontic therapy to maintain strategically important teeth. If extensive restorative procedures are contemplated, the necessary endodontic procedures should be completed prior to the restorative procedures.

Everyday observations in the dental office show that an intact dentition (that is, a dentition with no missing teeth) is not common. An intact dentition with normal crowns, periodontal tissues and occlusion, is almost a rarity. Certainly it is hoped that as a result of long range, intense research in caries control, periodontics, orthodontics, and other areas, intact and ideal dentitions will be more common.

Because of economic reasons, time, indifference on the part of the patient or the dentist, and other reasons, missing teeth may or may not be replaced with fixed or removable appliances. When they are not replaced, shifting and exfoliation of teeth, malocclusion, unfavorable restorative conditions in contiguous teeth and periodontal problems may result. Even if the teeth are replaced, detrimental conditions may be caused. These include drastic reduction in adjacent teeth used to accommodate bridge attachments, possible pulpal damage incident to such reduction, periodontal complications, occlusal disharmonies, unpleasant esthetic results, and the creation of conditions predisposing to caries formation.

Caries involving pulps is the causative factor in a large percentage of missing teeth. Through the use of modern endodontics, recent developments in dental materials and new restorative procedures and instruments, it is now possible to restore to health and function many carious teeth which hitherto would have been extracted. Although not a panacea, endodontics, through the adherence to certain basic factors, is reliable and effective. These factors include adequacy in (1) diagnosis and selection of cases for treatment; (2) aseptic procedures; (3) instrumentation; (4) drug therapy; (5) bacteriologic control; (6) canal obturation; and (7) subsequent periodic roentgenographic check-up. Supported by biologic and scientific information and principles, these clinical factors provide sound and rational endodontic results.

TOOTH ESSENTIALITY

A specific tooth may have great strategic value or essentiality. Loss of such a tooth can often cause an insurmountable restorative or replacement problem. In many instances, the loss of a pulp-involved essential tooth can be prevented by the filling of its verified sterile canal, after effective endodontic therapy. The subsequent coronal restoration of the

tooth completes a combination of procedures for restoring the tooth to a state of health and function (Fig. 1).

It has previously been pointed out[1] that tooth essentiality is increased when a tooth is needed for: (1) space maintenance; (2) more effective fixed bridge or partial denture construction; (3) preservation of the integrity of a fixed bridge or partial denture for which the tooth is supporting an attachment or clasp; (4) prevention of operating procedures on adjacent teeth that would be necessary if the tooth had to be replaced with a fixed bridge; (5) elimination of complex problems concerned with its replacement; (6) salvation of an adequately placed restoration under which pulpal degeneration has occurred; (7) protection of the general health of the patient when extraction is contraindicated; and (8) maintenance of the arch as an entity when no other teeth have been previously extracted (Fig. 2).

PULP CONSIDERATIONS IN MULTIPLE RESTORATIONS

In recent years there has been an increase in the usage of multiple or quadrant restorative and replacement procedures to expedite full mouth reconstruction or rehabilitation when needed. These procedures have been described in the literature by Hohlt, Mann, Bignell, Pfeiffer and Jeffreys, Thompson, and Skinner,[2-7] and have been facilitated by the development of new impression materials. Among these materials are reversible hydrocolloid, irreversible hydrocolloid, and rubber base material (which have been discussed by Hohlt,[2] Bailey,[8] Phillips,[9] and Paffenbarger,[10]) and the later-developed silicone and other elastic impression materials. The use of these materials after preparatory procedures which utilize recently improved carbide burs and diamond stones at a greatly increased rpm rate results in effective restorative and replacement results, with an appreciable decrease in operative time (Fig. 3).

The extensive nature of the final restorative result in these procedures requires that special precautions be observed to prevent later pulpal complications. Such complications can be caused by the heat generated during instrumentation; the depth of caries and amount of peripheral tooth substance removed with an incidental decrease in the normal protection of the pulp; the size of the metallic restorations with an accompanying transmission of increased thermal irritation to the pulp; a previous deviation

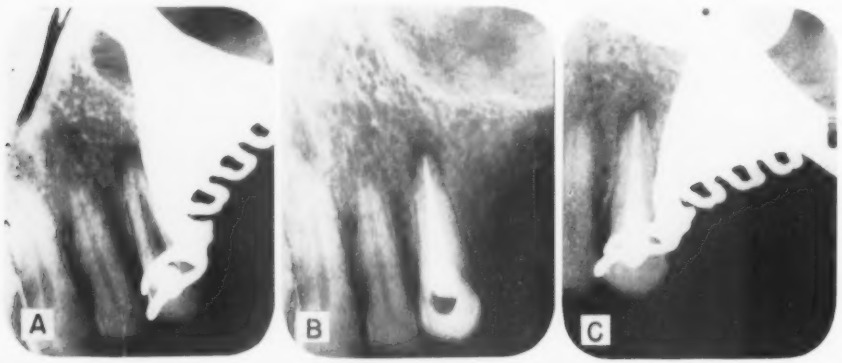

Fig. 1 • A: Cuspid supporting a partial denture and having a necrotic pulp and apical involvement. B: Root canal treated. C: Progress of apical healing—two months.

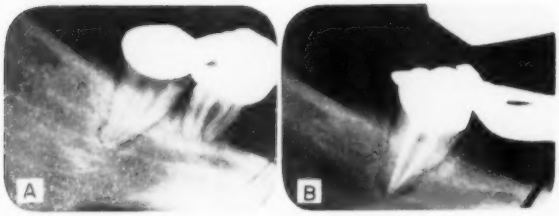

Fig. 2 • A: Pulp involved third molar urgently needed for more efficient partial denture construction and stabilization. B: Canals treated and filled; tooth supporting partial denture clasp.

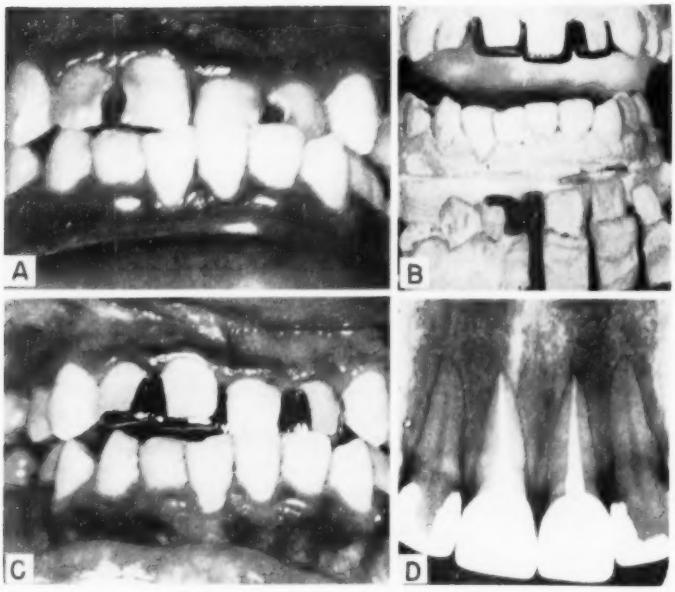

Fig. 3 • Anterior multiple inlays, including those for two treated pulpless incisors. A: Original clinical appearance. B: Wax patterns on models made from hydrocolloid impression. C: Completed inlays. D: Postoperative roentgenogram.

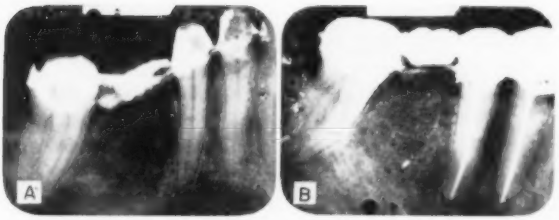

Fig. 4 • A: Two bicuspids in which acute pulpal symptoms developed after preparation for fixed bridge attachments. B: Canals treated and filled and bridge completed.

from normal in the health of the pulp; and combinations of any of the foregoing.

Heat generation can be reduced by judicious use of the rotary instruments, accompanied by the application of water or other coolants. Since the pain symptoms usually are masked by local anesthesia, strict attention must be given to this precautionary requirement.

Dentin Sterilization • Deep-seated caries is a constant source of anxiety in operative procedures and requires appropriate treatment. Burkman, Schmidt and Crowley[11] have recommended a dentin-sterilizing material composed of a 50,000 unit soluble penicillin G tablet mixed to a reasonably dry, stiff paste with a drop of camphorated para-chloro-phenol. In deep caries where there is a possibility of pulp exposure if the last vestige of caries is removed, Burkman and his associates advocate the application of the mixture to the deep region and the restoration of the remainder of the cavity with a temporary cement. After an observation period of 3 to 6 months which (if accompanied by lack of unfavorable clinical symptoms, positive vitality tests and favorable roentgenograms) indicates the maintenance of pulpal vitality, the tooth is permanently restored. Such a waiting period would not be desirable in cases where other extensive preparations had already been made. This is especially true, inasmuch as the advocates of this dentin-sterilizing procedure do not claim success in all instances wherein it is followed. However, in carefully selected cases, the procedure undoubtedly does have some merit.

Secondary Dentin Stimulation • The efficacy of calcium hydroxide and the technic for its use as a dentin-formation stimulant have been discussed in the literature.[12] This substance is of particular value in the capping of exposed pulps, provided the principle of strict selection of cases is observed. The pulpal healing and reaction have been verified and described by Patterson and Van Huysen.[12] Here again, a successful result cannot be expected in every tooth so treated. The importance of a particular tooth to the over-all result in a reconstruction or rehabilitation program may make it unwise to risk capping the exposed pulp of that tooth. However, the use of calcium hydroxide in all deep cavities is highly advisable. The presence of an unobservable microscopic pulp exposure is possible, and this precautionary measure can readily prevent subsequent pulpal symptoms and disease. Even in the absence of an actual minute exposure, the possible stimulation of secondary dentin formation[13] by calcium hydroxide would provide additional beneficial pulp protection.

Pulp Removal and Canal Therapy • It has been mentioned earlier in this article that current endodontic procedures, supported by biologic and scientific information and principles, are reliable and effective. The importance of healthy pulps in the success of extensive restorative projects has also been previously mentioned. Rather than risk an unfavorable response to an attempt to maintain vitality in pulps wherein there is even the slightest doubt as to the prognosis, it is advisable to remove the pulp and complete necessary endodontic procedures prior to restorative procedures (Fig. 4). Endodontics employing usual drug therapy has been outlined by Healey,[1] and Sommer, Ostrander and Crowley;[14] endodontics employing intracanal antibiotic therapy has been described by Bender,[15] Grossman[16] and Stewart.[17] The designation of these two methods of treatment is determined by the germicidal agent employed. However, it is generally conceded by the advocates of each that the germicidal agent used is secondary in importance to thorough instrumental preparation of the canal to

effect a sterile condition prior to canal obturation. The dentist must select and follow the method of treatment with which, in his hands, the best results can be obtained. Failure to recognize incipient pulpal disease during operative procedures and its symptomatic development before or after completion of extensive restorations, causes unnecessary complications. Symptoms are sometimes vague, transitory, and not readily localized. Pulp vitality tests are usually impossible to apply, because of extensive metallic coverage of the teeth. When the offending tooth is determined, it becomes necessary to mutilate the recently completed restoration to gain access for proper endodontic treatment of the root canal. The treatment at this time is usually complicated by increased bacterial activity in the canal. On completion of the endodontic therapy, additional restorative procedures are necessary for the restoration of the opening required for treatment (Fig. 5).

Often, even though the health of the pulp is not endangered, carious destruction of the crown is such that adequate retention cannot be obtained in the restoration. In these instances, endodontic procedures, followed by removal of enough of the canal filling to accommodate a platinum-gold-palladium alloy post supporting a cast gold core for increased retention for the restoration, are indicated. This technic has been described in the literature,[18] and is also of particular value in the jacket crown restoration of fractured anterior teeth with large pulp chambers.

Fig. 5 • Extensive upper arch restorations including two pulpless incisors with jacket crowns over preparations utilizing metallic posts with cast gold cores for additional strength and retentive properties. A: Filled root canals. B: Jacket crowns and fixed bridges.

SUMMARY

1. Current endodontic procedures are capable of reducing the number of teeth condemned to extraction.

2. Mouth rehabilitation is facilitated by the use of endodontic therapy to maintain strategically important teeth in the mouth.

3. Judicious operative procedures and ample pulpal protection in extensive preparations are necessary to prevent subsequent pulpal necrosis.

4. Endodontic therapy to prevent probable later pulpal disease and to provide for better retentive means for the eventual restoration is advisable in certain cases.

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1. Healey, H. J. Endodontics: selection of cases and treatment procedures. J.A.D.A. 53:434, Oct., 1956.

2. Hohit, F. A. Hydrocolloid techniques in the fabrication of inlays by the indirect method. Dental Clinics of North America. Philadelphia, W. B. Saunders Company, March 1957, p. 139.

3. Mann, A. W. Critical appraisal of the hydrocolloid

technique; its advantages and disadvantages. J. Pros. Den. 1:727 Nov. 1951.

4. Bignell, K. A. Hydrocolloid technic. Illinois D. J. 18:163 May 1949.

5. Pfeiffer, K. R., and Jeffreys, F. E. Complete bridge technic utilizing the alginate hydrocolloids. J.A.D.A. 40:66 Jan. 1950.

6. Thompson, M. J. Standardized indirect technic for reversible hydrocolloid. J.A.D.A. 46:1 Jan. 1953.

7. Skinner, E. W. Science of dental materials, ed. 4. Philadelphia, W. B. Saunders Company, 1954.

8. Bailey, L. R. Rubber base impression techniques. Dental Clinics of North America. Philadelphia, W. B. Saunders Company, March 1957, p. 157.

9. Phillips, R. W.; Price, R. R., and Reinking, R. H. Use of alginate for indirect restorations. J.A.D.A. 46:393 April 1953.

10. Paffenbarger, G. C. Hydrocolloidal impression materials: physical properties and a specification. J.A.D.A. 27:373 March 1940.

11. Burkman, N. W.; Schmidt, H. S., and Crowley, M. C. Preliminary report of an investigation to study the effectiveness of certain drugs for sterilizing carious dentin. Oral Surg., Oral Med. & Oral Path. 7:647 June 1954.

12. Patterson, S. S., and Van Huysen, G. Treatment of pulp exposures. Oral Surg., Oral Med. & Oral Path. 7:194 Feb. 1954.

13. Klein, Arthur. Personal communication.

14. Sommer, R. F.; Ostrander, F. D., and Crowley, M. C. Clinical endodontics. Philadelphia, W. B. Saunders Company, 1956, p. 148-151.

15. Bender, I. B. Penicillin in root canal therapy: report of 53 cases. J.A.D.A. 34:99 Jan. 1947.

16. Grossman, L. I. Root canal therapy, 4th ed., Philadelphia, Lea & Febiger, 1955, p. 276-279.

17. Stewart, G. G. Preliminary report on penicillin in root therapy. J.A.D.A. 33:1281 Oct. 1946.

18. Healey, H. J. Restoration of the effectively treated pulpless tooth. J. Pros. Den. 4:842 Nov. 1954.

Solder joints on rustless alloys

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Passivation is a method of restoring the continuity of the oxide film on metal surfaces in order to reduce corrosion. Nickel-chromium alloys should be chemically or electrically passivated before these alloys are soldered. Wherever possible, soldered nickel-chromium alloys should be scrubbed mechanically, dried and set aside to be passivated atmospherically.

The increased use of nonprecious rustless alloys for dental structures (particularly in prosthetics, oral surgery and orthodontics) coupled with the instability of the solder bonds, demands that tests and evaluation be made of the physical properties.

Although tissues tolerate nickel-chromium alloys in contact with them, the alloys are subject to corrosion.[1] The corrosion resistance of rustless alloys is believed to result from a thin, continuous surface film of oxide formed by exposure to atmospheric or to certain oxidizing conditions. The film of oxide is removed or its continuity is disturbed during spot welding or soldering, or when the alloy is abraded while being fabricated into a dental appliance. When the dental appliance will be exposed immediately to saliva and decomposing food, it is necessary to restore the continuity of the oxide film by a process called passivation (exposure to certain acids or to acid mixtures containing oxidizing agents). Passivation in certain acids or mixtures containing oxidizing agents, or by electrical anodization, reduces the magnitude of corrosion.

Table • Relative pit susceptibility of 18-8 type 302 austenitic steel*

Physical finish†	Weight loss (mg.)	No. of large pits
No. 1	30.2	20
No. 1-passivated	2.7	2
No. 4	25.1	13
No. 6	12.6	5
No. 8	5.5	2

*Based on tests by H. A. Smith.[2]

†The finishes of the test pieces used by Smith are standard in regular steel production: "Finish no. 1, hot rolled, annealed, pickled. Finish no. 4, standard polish. . . . Finish no. 6. . . . soft and satiny and has low reflectivity. Finish no. 8, mirror finish. . . ."

SURFACE CHANGES RESULTING FROM PASSIVATION OF RUSTLESS ALLOYS

H. A. Smith,[2] in a study of relative susceptibility to pitting, showed that in 18-8 type 302 austenitic steel the surface finish was related to the amount of corrosion. The corroding solution was 10.8 per cent $FeCl_3 \cdot 6H_2O$ in 0.05 normal hydrochloric acid with immersion for four hours. The passivation used by Smith was accomplished by a 15 minute immersion in 10 per cent chromic acid at 170° F. The test area was 10 square centimeters (see table).

An analysis of the results shows that the greatest loss of weight is coupled with the greatest number of pits in an ascending scale relative to the smoothness of the physical finish, with the sole exception of the passivated specimen. The roughest finish shows the greatest weight loss coupled with the greatest number of pits but a magnitude of loss of only 1.51 mg. per pit. The mirror finish shows a weight loss of only 5.5 mg. with only two pits, but each pit indicates a loss of substance of approximately 2.75 mg. The passivated surface of the roughest finish, on the other hand, shows the lowest weight loss coupled with the lowest weight loss per pit.

The usual procedure for passivation is by immersion of the article to be passivated in a solution containing 10 to 20 per cent nitric acid by volume at 130° to 140° F. for 15 to 20 minutes. An alternate method is by immersion in a solution of 10 to 20 per cent nitric acid containing 2 per cent sodium dichromate at 110° to 130° F. for 30 minutes, followed by immersion in a 5 per cent solution of sodium dichromate at 140° to 160° F. for one hour. Neither of these methods is of practical use in passivating dental appliances because of the lack of time as well as the usual absence of a hood.

Immersion in a solution of 8 Gm. ferric sulfate (anhydrous), 4 Gm. sodium fluoride, 10 ml. sulfuric acid (conc.), and 90 ml. water at room temperature for ten minutes is more suitable in the dental office. A polyethylene container with a tightly fitting polyethylene cover should be used to hold the passivating solution. The solution loosens scale by converting the oxides of iron, chromium and nickel to higher oxides more readily soluble in the acid, and also passivates the surface of the rustless alloy by oxidation. The ferric sulfate in the solution combines with excess hydrofluoric acid to form ferric fluoride which is nonvolatile at room temperature. This

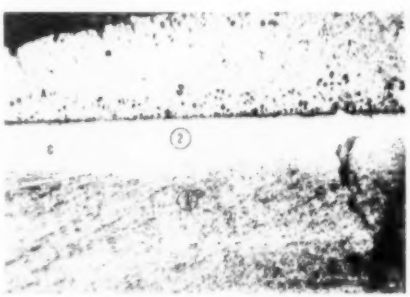

Fig. 1 • Electrically passivated 18-8 austenitic steel type 304 wire (C), soldered with silver solder (A). The picric acid etch reveals wrought austenitic structure (1) in the center, whereas at the periphery the wire resists the reagent (2). This characteristic is present throughout entire length of the wire, whether adjacent to solder or at extremities which have not been subjected to the flux or the temperature of soldering.

solution will loosen gross scale but will not polish an appliance.

"Electrical passivation" of rustless alloys is a more rapid and more controlled procedure than "chemical passivation" (Fig. 1). In addition to polishing, passivation, and removal of scale, gross reduction in wire diameter can be made rapidly. The appliance is used as anode in a solution of 90 ml. phosphoric acid (conc.), 30 ml. glycerine and 30 ml. water, contained in a stainless steel dish acting as cathode, with a current supply of 10 amperes at 12 volts. The time is 30 seconds except where gross reduction in size is desired.

SOLDER JOINTS IN GOLD-PLATINUM AND NICKEL-CHROMIUM ALLOYS

In this study of solder bonds, the materials joined were 18-8 type 304 austenitic steel wrought wire and tubes supplied by two different manufacturers; 80 nickel-20 chromium wire, and gold-platinum wire. The solders used were 450 fine 14 carat yellow gold solder, melting point of 1415° F.; 400 fine 10 carat white gold solder, melting point of 1390° F., and a silver solder containing silver, copper, cadmium, zinc and nickel, melting point of 1170° F. A fluoride flux, gas-air orthodontic blow torch and a wire jig served as accessory materials. The specimens were mounted in acrylic resin, polished, and examined microscopically before and after etching. The etching reagent for the nickel-chromium alloys was saturated picric acid in ethyl alcohol plus 5 per cent hydrochloric acid, and for the gold-platinum alloy it was 10 per cent potassium cyanide, plus 10 per cent ammonium persulfate.

The term soldering applies to the joining of alloys by the process of melting a metal or alloy with a lower fusing point, flowing it over the alloy to be joined at the point for junction, and allowing it to cool below the melting range of the solder, to solidify and form the joint. Generally, at temperatures over 800° F., this is classed as brazing.

Microscopic examination indicates distinct differences between the solder bonds involving nickel-chromium alloys and those involving gold-platinum alloys. This is in accord with the reported differences in the type of failure during function. At temperatures suitable for soldering without reducing valuable physical properties, there is a solution of the gold-platinum alloys in the solder. At similar temperatures, any alloying of the nickel-chromium that may occur appears to be superficial. The nickel-chromium alloys studied appear to have a microstructural framework that remains intact as a physical boundary or interface during soldering (Fig. 1).

"Soldering by solution" applies to the joining of alloys where there is a dispersion of one or more substances in another so as to form a homogeneous mixture. Coleman[3] and Crawford[4] have shown evidence of solution of wrought gold alloys in gold solder.

With an excess of a constituent with a higher freezing point present, a continuous series of alloys soluble in the liquid phase will occur. When a bit of solder is melted on a gold alloy wire, the wire starts to go into solution. In a solution, the particles of the solute are in a state of extremely minute subdivision and they are distributed throughout the solvent. The limit of solubility can, in general, be extended by a rise in temperature. In the gold solder to gold alloy joints, these conditions are met. The melting range of the solder rises as long as any wire remains and the heat is increased to maintain the solder in molten condition. These specimens (Fig. 2-4) were prepared as rapidly as possible. The alloying did not go as far as on the longer heated specimen shown by Coleman,[3] who indicated that the gold-to-gold soldered bonds fail most often adjacent to the bond, because of structural failure of the wire.

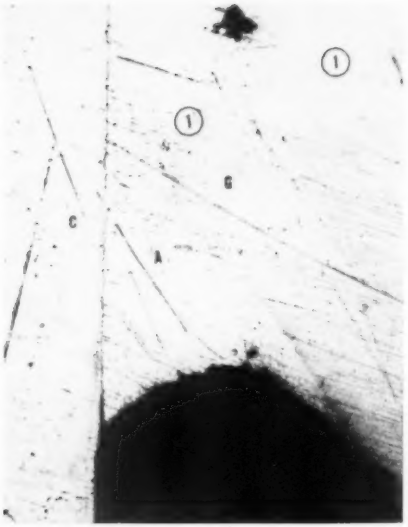

Fig. 2 • Junction of 18-8 austenitic steel type 304 tube (C), soldered with silver solder (A) to gold-platinum wire (G). Outline of gold-platinum alloy (1) is vague or almost impossible to see.

"Soldering by wetting" applies to a superficial attachment of the lower fusing metal or alloy to the other. Wetting may be accompanied by adsorption, diffusion, or leaching.

In all specimens of the nickel-chromium alloys, the boundary between the wrought structure and the solder is clear when polished but not etched. It makes no difference how the wire was cleaned prior to soldering, or which solder was used. The surface irregularities of the wrought structure are evident against the solder. One might assume that the original surface irregularities, cleaned and corroded by flux, provide means of retention for the solder when it is applied to rustless alloys.

Microscopic examination of the interface and structure of joints between solder and the nickel-chromium alloys studied indicates that the wrought structure remains intact. This is true in every instance, at the magnification and temperature used. The junction is easy to identify. It invariably appears as a structure continuous with the original surface. When the bond of a rustless alloy fails, investigation shows that it is the bond itself, not the alloy or solder, that has failed. The solder separates from the alloy as an integral unit.

The junction of solder with the gold-platinum alloy is difficult to identify in the unetched specimens. Etching clearly reveals the invasion of the wrought structure by the solder. This has not been demonstrated with nickel-chromium alloys. Since the wrought nickel-chromium and gold-platinum alloy wire structures shown in Figures 2, 3 and 4 were in the same mass of molten solder, they must have been in about the same temperature range.

CORROSION OF SOLDER JOINTS ON NICKEL-CHROMIUM ALLOYS

Nickel-chromium alloys used for orthodontic, surgical, prosthetic and orthopedic purposes, have as their most limiting factor characteristic types of corrosion. For the most part these types of corrosion have been mentioned in the literature, but not fully explained. This study was made of two types of rustless alloys which are

Fig. 3 • Same area as in Figure 2, with picric acid etch which makes clear the junction (1) of the silver solder (A) with the gold-platinum alloy (G).

Fig. 4 • Same area as in Figures 2 and 3. Potassium cyanide etch shows that chemical composition of solder (A) is not constant.

resistant to body fluids and are commonly used for orthodontic bands and appliances: 18-8 type 304 austenitic steel and 80 nickel-20 chromium. These two alloys are commonly subject to several types of corrosion: "crevice corrosion," "stress corrosion cracking" and "fire cracking."

Stress corrosion cracking is characterized by a "spontaneous failure of metals by cracking under combined action of corrosion and stress, residual or applied."[5]

Fire cracking results where "residual stresses . . . cause metals to crack quickly . . . when heated."[6]

Crevice corrosion is characterized by a failure of the bond, with little or no macrocorrosion of the soldered joints or the solder. In the appliances where the bond failed either clinically or experimentally, there was no obvious corrosion or pitting of any metal.

Based on the research[7] into the nature of crevice corrosion in type 430 martensitic steel which contains no nickel, it was suggested in the Handy and Harman technical bulletin T9 that a nickel-containing brazing alloy might eliminate crevice corrosion in 18-8 austenitic steel as well. Silver-copper alloys of this type are available commercially. A silver-copper-cadmium-zinc-nickel alloy (Fig. 5) was used in this series in addition to the 400 fine white gold solder (Fig. 6) and 450 fine yellow gold solder (Fig. 7).

Samples of soldered joints were washed in detergent to remove flux. They were placed in the ferric fluoride passivating solution for ten minutes. The samples were then mounted in acrylic resin and polished with abrasive paper, and with aluminum oxide in water. In the microscopic examination at 365 magnification, crevice corrosion in varying degrees was readily observable.

Other samples of soldered joints were immersed in a ferric fluoride solution for 12 hours. Total separation of the parts on certain of the samples ensued (Fig. 8). Immersion of joints for relatively short periods in a ferric fluoride solution in vitro would appear to simulate similar corrosion which takes place in vivo over

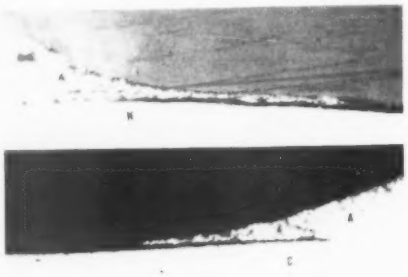

Fig. 5 • Above: 80 nickel-20 chromium alloy (N), soldered with silver-copper-cadmium-zinc-nickel alloy solder (A), chemically passivated. Below: 18-8 austenitic steel type 304 alloy (C), soldered with silver-copper-cadmium-zinc-nickel alloy solder (A), chemically passivated.

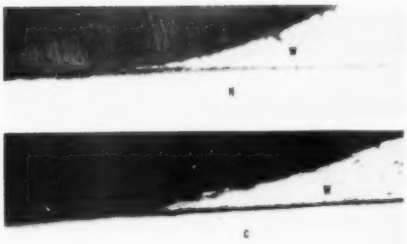

Fig. 6 • Above: 80 nickel-20 chromium alloy (N), soldered with 400 fine white gold solder (W), chemically passivated. Below: 18-8 austenitic steel type 304 alloy (C), soldered with 400 fine white gold solder (W), chemically passivated.

Fig. 7 • Above: 80 nickel-20 chromium alloy (N), soldered with 450 fine gold solder (Y), chemically passivated. Below: 18-8 austenitic steel type 304 alloy (C), soldered with 450 fine gold solder (Y), chemically passivated.

a period of months or, in some instances, years.

Crevice corrosion can be clearly demonstrated in 18-8 type 304 austenitic steel and in 80 nickel-20 chromium alloy, with all three types of solder used, despite the nickel content of the silver solder.

H. L. Logan,[8] in his investigation of stress corrosion, found a difference in electric potential between areas of 18-8 type 302 austenitic steel in which the atmospherically formed protective film was ruptured by abrasion, and areas in which the film was intact. The surfaces in which the film was ruptured were 0.28 to 0.78 volts more negative with respect to a calomel electrode of the saturated KCl type, than the intact surfaces. With this evidence of differences of potential between passivated and active surfaces, the mechanism of crevice corrosion is attributed to the formation of a cell of the active-passive type (Fig. 9). It would need but the slightest active surface on the junction of the bond to provide a foothold for the formation of such a cell.

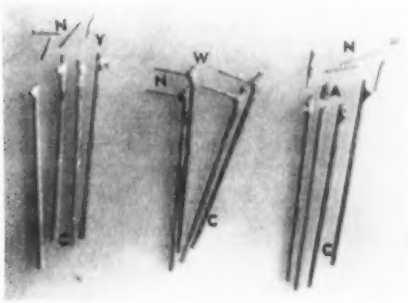

Fig. 8 • 80 nickel-20 chromium alloy (N), soldered to 18-8 austenitic steel type 304 (C), with 450 fine yellow gold (Y), 400 fine white gold (W), silver-copper-cadmium-zinc-nickel alloy (A), in ferrous fluoride solution for 12 hours.

Frank LaQue of the International Nickel Company, in an address on the "Nature of Corrosion of Metals" before the New York Chapter of the American Society for Metals on October 10, 1955, indicated that an oxygen concentration cell of differential aeration type (Fig. 9) might be a responsible factor in crevice corrosion. A situation favorable to the formation of such cells might well exist in the mouth.

Curiously enough, although crevice corrosion will take place consistently in the solution used for the in vitro experiments, it does not take place consistently with gross separation in the mouth. Not all of the bonds will disintegrate in the same mouth, nor necessarily disintegrate in the mouths of all patients.

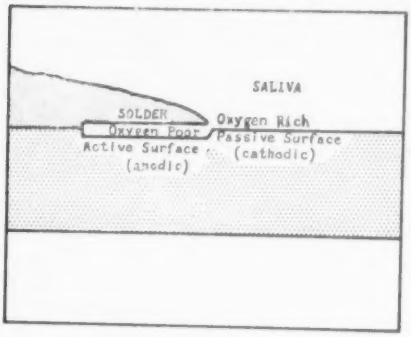

Fig. 9 • Cells of active-passive type and differential aeration type.

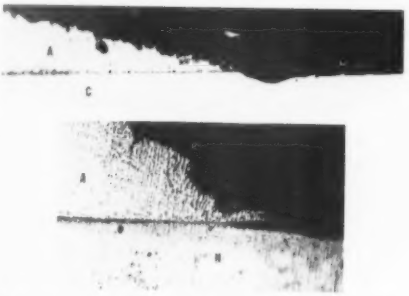

Fig. 10 • Above: 18-8 austenitic steel type 304 (C), soldered with silver-copper-cadmium-zinc-nickel alloy solder (A), electrically passivated. Below: 80 nickel-20 chromium alloy (N), soldered with silver-copper-cadmium-zinc-nickel alloy solder (A), electrically passivated.

SOLDERED JOINTS AFTER ELECTRICAL PASSIVATION

Samples of the 80 nickel-20 chromium alloy and 18-8 type 304 austenitic steel wire were soldered with a silver-copper-cadmium-zinc-nickel alloy. They were washed with detergent to remove the flux. The samples were immersed as anode in a phosphoric acid-glycerine-water solution with a current supply of 10 amperes at 12 volts for 30 seconds. In Figure 10, above, there appears the formation of a shallow depression in the rustless alloy directly adjoining the solder-rustless alloy junction. In Figure 10, below, there appears to be crevice corrosion.

CONCLUSIONS

Since crevice corrosion was demonstrated after both chemical and electrical passivation, it would appear that chemical or electrical passivation of the nickel-chromium alloys might best precede soldering. Wherever possible, soldered nickel-chromium alloys should be mechanically scrubbed, cleaned, dried and then set aside to be passivated atmospherically.

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1. Bien, S. M.: Disintegration of solder joints on base metal orthodontic appliance. Unpublished.

2. Smith, H. A.: Pit corrosion of stainless steel. Metal Progress, 33:596 June 1938.

3. Coleman, R. L.: Some effects of soldering and other heat treatments on orthodontic alloys. Internat. J. Orthodont. & Den. Children 19:1238 Dec. 1933.

4. Crawford, W.: Personal communication to H. D. Ayers, Jr.

5. The American Society for Metals: Metals handbook. Cleveland, The American Society for Metals, 1948, p. 14.

6. The American Society for Metals: Supplement to metals handbook. Cleveland, The American Society for Metals, 1955, p. 89.

7. Halbig, J. J.; Grenell, L. H., and Sistare, G. H.: New alloys stop corrosion in silver-brazed type 430 joints. Iron Age 172:159 Dec. 10, 1953.

8. Logan, H. L.: Film-rupture mechanism of stress corrosion. J. Res. National Bureau of Standards 48:99 Feb. 1952.

Health and Water • So long as men inhabit the earth, their success, happiness and health will, in a large measure, depend upon how wisely and how well they control and use water. *Thomas King.*

What I expect from my career in dentistry

Jack Drandell, San Francisco

This prize essay was the winner of the Chicago Dental Society Centennial Essay contest for dental students throughout the country. It was based on the theme "What I Expect of Dentistry as a Career." The contest was held to stimulate dental students to write; to create in them a more active interest in American Dental Association affairs, and to crystallize in their minds their purpose in becoming members of the dental profession. The Society sponsored this contest especially to commemorate the centennial of the American Dental Association. It could think of no better way to begin a second century of service than to obtain from those who will soon begin their life work an expression of their hopes and aspirations concerning their careers in dentistry.

This we think Jack Drandell, an undergraduate of the University of California Dental School in the field of orthodontics, a specialty he expects to follow in the Los Angeles area, has done. Jack received his B.S. degree from Southern Methodist University, and since 1947 has worked in the field of engineering until he chose dentistry as a profession. He is married and has two children. Photography is his main hobby. Jack is 34 years old and therefore has a more mature understanding than the average undergraduate. In his essay he has expressed the ideals and aspirations of our founding fathers for a free and unfettered dental health service.—*Elmer Ebert**

What an individual expects from a career depends on his motivations, the effort expended and hope. Those seeking a dental career obviously are expending a great deal of effort and there is hope that the future will fulfill their best expectations. This paper will discuss my expectations and, of necessity, my motivations in pursuing a dental career.

Dentistry as a career can offer much to anyone who but stops to study the advantages of this profession. The standard phrases that apply to dentistry, as to almost all professions, are: help for your fellow man, easing of pain, sound standing in a community through a comfortable living, the prestige of a title, and many others. But these are statements that apply in varying degrees to a carpenter or a physician, a grocer or a lawyer, a plumber or a dentist. Although this paper will cover some of these advantages, it will deal with other factors frequently overlooked.

Most often dentists pursue a course of education that begins immediately after high school and terminates with a D.D.S. degree. These days there is sometimes a break in the course for military service, but essentially it runs as stated. This

means, then, that most dentists select their career in high school, graduate from dental school and enter practice without having had experience in another profession. The expectations in this instance are related to what they have seen and heard about dentistry and their own personal desires. Too often these are entirely monetary. This approach to the profession obviously is different from that of someone who has been a member of another profession or of someone who has had experience in fields other than dentistry. Since I have had more than one experience before turning to dentistry, my outlook on the subject will be somewhat different and there will be more emphasis on certain advantages of dentistry that usually are glossed over or omitted.

First of all, as I see it, I will appreciate dentistry as a profession. Even now, as a junior dental student, its many advantages become more evident. The basic satisfactions I expect to get out of dentistry are tied in with an obvious liking for what I am now doing and hope to do later in private practice.

To begin with, a basic result I hope to get out of dentistry is independence. This feature is often glossed over in reports on the advantages of a dental career, but I feel it is one of the fundamental values of the profession. It is best exemplified by the reactions of my former employer on hearing of my plans to leave his employment. I might say my last position was with one of the largest and most respected industrial giants in the United States. After explaining my reasons for leaving the company, no arguments were offered to try to dissuade me, but rather my employers felt a pride that one of their employees was striking out "on his own." If my reasons for leaving had been to seek a medical or legal degree or to enter business for myself, the reactions would have been the same. But if I had resigned to go to another job, whether in the same industry or not, there would not have been the extreme cordiality, continuing friendship and sincere best wishes as were manifested. The advantages of another job would have been slight in the eyes of my employers and would not have been felt to be on the same plane as those achieved by becoming a true professional man. I have found that most people respect you and wish you the best when you get out on your own. As one executive once put it: to go from one job to another, no matter how great an improvement, is still moving within the "job" arena, but to start from scratch to gain one's own business or profession, represents something bigger and more courageous than moving into another job. It would seem that almost all men have a hidden dream of being on their own—it is, in fact, the American dream of making your own way, being independent and standing on your own two feet. This country's growth and expansion are due to people who desire independence, who want no taskmaster but themselves, and who venture into new enterprises. The thought of striking out on one's own is truly an American ideal and has proved the magic hope for the millions of immigrants who make up this country.

Possibly this feeling about independence is not shared by many members of the dental profession, especially those whose experience has been limited to dentistry. I have observed that many dentists who complain of dentistry's disadvantages have never experienced the disadvantages of other professions. Those few who were once in other fields I have found are far more appreciative of their dental careers. In the final analysis it is only by comparison that one can judge a situation. It is often disconcerting to me to talk to a dentist who complains that dentistry consists only of hard work and relatively poor pay. To them I say that dentistry is not an easy profession and the remuneration is not meant to make one wealthy, but in the vast world

outside dentistry, jobs also mean hard work, poor pay, and, in addition, a boss to put up with forevermore.

Being your own boss is not the acme of any profession; it goes hand in hand with other values one must have for the total fulfillment of a good career. A most important phase of dentistry and the one from which I expect to derive a great deal of satisfaction is in a job well done. A very common complaint heard today about our advanced industrial system is that the worker is so far removed from the finished product that he cannot associate himself with it. In order to produce any item, a vast team effort is required and the individual's contribution often is quite small, even though vital. In the upper echelons of business, the political machinations, the compromises and clashes of personalities often leave little time for creative effort and, finally, if one does see a project through, it is less the handiwork of the individual than it is the result of compromise and politics.

In dentistry, I expect to be able to take a given patient's problems, establish a plan of treatment, compromising if necessary with my own judgment, and finally have the satisfaction of seeing the work through to completion. I hope to the point that I can feel satisfaction and take pride in a job well done. There are very, very few professions where this is possible, and dentistry has this tremendous advantage to offer anyone who chooses it as a career.

To diverge a bit to bring home another most important point; the oral cavity has long been a no-man's land, almost ignored by physicians and, save for the teeth, untouched by the dentist. Now, with our training in such subjects as dental medicine, oral pathology, pharmacology and the like, it offers ever widening vistas of practice to the graduating dentist. This is extremely important in this picture of expectations, for, honestly, I would find dentistry a most boring profession in spite of all the good points previously mentioned if it didn't offer a challenge. Since the practice of dentistry has advanced from the stage of looking at one tooth at a time to the present where treatment consists of taking care of the entire oral cavity, it offers as much challenge as the practitioner wishes to receive. This question of challenge is highly important, for although there is repetition and boredom in almost every job, if it were completely this, life would be unbearable.

In summary, it is obvious that I, or any graduating dental student, can expect much from dentistry. Among the secondary features are a comfortable income, community standing, and, very important, the satisfaction of helping your fellow man. This last item is important, but is discussed so often when reference is made to any branch of medicine, that it has not been enlarged on in this paper. However, since any dentist must like people, which I do, this advantage was a most important factor in my decision to take up a dental career. I consider it of prime importance, and I expect a lot of satisfaction from helping those who seek me out for dental treatment. As to a comfortable income and community position, I had these before I returned to dental school; what I hope to add are: independence, pride in my work, the satisfaction of a complete job well done, helping my fellow man, and as much challenge to my mental abilities as I care to pursue. I hope to gain all of these from dentistry.

1319 Thirty-fifth Avenue

*Editor, The Fortnightly Review of the Chicago Dental Society.

reports of councils and bureaus

American Dental Association statement on bill to establish a National Institute for International Health and Medical Research

COUNCIL ON LEGISLATION

On March 4, representatives of the Association presented testimony before the Subcommittee on Health of the Senate Committee on Labor and Public Welfare on a proposal sponsored by Senator Lister Hill (D., Ala.) (S.J. Res. 41) to establish a National Institute for International Health and Medical Research. The proposal known as the "Health for Peace Bill" has the co-sponsorship of 58 senators and has received approval of the American Medical Association and other leading health organizations.

The Association's House of Delegates approved the bill in principle during the annual session in November 1958.

The full text of the statement to the Committee is presented below.

Mr. Chairman, members of the Committee, I am Matthew Besdine of Brooklyn, N. Y. I am a member of the American Dental Association's Council on Legislation. I am accompanied by George C. Paffenbarger, of Boyds, Md., director of the Association's research division at the National Bureau of Standards, and C. Willard Camalier, assistant secretary of the Association.

The American Dental Association appreciates this opportunity to present its views on S.J. Res. 41, the "Health for Peace" bill.

This is the first official occasion on which we have had the honor of addressing the distinguished chairman of this Committee as a fellow member of the American Dental Association. We were privileged to have Senator Hill accept honorary membership in the Association during our annual session held in Dallas, Texas, last November.

On that occasion, in his address before our House of Delegates, it was our good fortune to have the purposes of the pending legislation explained to us by the author. Following his clear, forceful and, of course, authoritative presentation, the Association's House of Delegates went on record unanimously in favor of the principles of S.J. Res. 41. The Association considers the "Health for Peace" bill another excellent example of statesmanship in the field of health legislation.

For people in the underdeveloped countries

of the world, most promise for improved health lies in the discovery of new means for preventing disease. Such discoveries will come from research in the health sciences. In addition to the need for expansion and acceleration of health research in order to uncover new ways of helping these people, there is a need to educate and encourage them to utilize the knowledge that already has been acquired.

Much can be done toward accomplishing these purposes by providing a system for coordinating effort and disseminating information as proposed in S.J. Res. 41.

I would like now to introduce George C. Paffenbarger who will present the main part of our statement. Dr. Paffenbarger is eminently qualified to speak on the subject of international dental research. He is a past president of the International Association for Dental Research and at present is chairman of a Subcommittee for the Standardization of Dental Materials of the Fédération Dentaire Internationale. Dr. Paffenbarger has presented lectures, demonstrations and postgraduate courses in Japan, the United Kingdom, the four Scandinavian countries and Italy. He has been selected as the Praelector for dentistry at the Scottish University of St. Andrews for 1959-60. He has an extensive acquaintance with dentists, dental research workers and teachers from all over the world. I am sure his testimony will be helpful to the Committee.

DR. PAFFENBARGER'S TESTIMONY

Consistent with its long-standing policy of encouraging programs designed to further research in the health sciences, the Association's House of Delegates in November, 1958, adopted, enthusiastically, a policy statement approving the principles embodied in S.J. Res. 41.

There would appear to be little room for dissent from the objectives sought to be attained through enactment of the joint resolution. The establishment of a world-center for health research, as contemplated in the bill, would seem to be a step in logical progression toward the ultimate goal of abolishing disease on a global scale.

At the present time this country undoubtedly has world leadership in health research. There is no question but that the health research programs carried on at public and private institutions in the United States are the most comprehensive, enlightened and productive in the world. It seems fitting, therefore, that this country should take the initiative in seeking to extend the benefits of health research to the peoples of all nations.

Despite the splendid research work that is being done here and in some places abroad, much more remains to be done. Millions of people continue to suffer and die each year from ailments that almost surely are preventable. Mounting evidence in research leads to the conviction that for future generations of people, many afflictions that are now regarded as "incurable" will not only be susceptible of curative treatment but will be avoidable by immunization or other technics as is the case today with smallpox, malaria, polio and other diseases which a few years ago were regarded as virtually uncontrollable.

As of this moment, research scientists are on the threshold of discoveries that may relieve countless human beings of untold pain and suffering and extend their lives by many years. Nothing should be allowed to detract from or impede this vital work; everything possible should be done to encourage and accelerate its progress.

A long step forward in this direction would be the establishment of an institution to foster the free and unfettered exchange of scientific information and personnel among the countries of the world without hindrance by political boundaries or other man-made barriers.

Certainly the crusade against sickness and disease is one in which all countries can enlist, and from which all peoples can benefit. The place of medical discovery is not important; a cure for disease is a boon to all of humanity regardless of the country of its origin. A review of medical history will show that significant discoveries have not been limited to any geographic area; achievements have come from all corners of the world. The names in an international "Who's Who in Health Research" would doubtless read like the membership roster of the United Nations.

In regard to the specific provisions of S.J. Res. 41, little need be said in justification of the proposal to provide machinery for the pooling and rapid international interchange of health information. Obviously, there can be no defense of a situation in which progress in the health sciences may be held up or retarded because of artificial barriers to or lack of facilities for adequate communication between scientific investigators. Nor can there be valid criticism of the proposal to provide a system for the coordination of the total research effort in order to make the most effective use of critical manpower and avoid waste and duplication.

Perhaps the single most significant aspect of S.J. Res. 41, from the standpoint of both immediate and long-term advancement in research, is the provision for training additional research

workers and for making maximum utilization of those presently available. The number one need today, at least in this Association's chief area of interest, is for additional skilled investigators. Many extremely promising areas of investigation are not now receiving adequate study simply because of lack of sufficiently trained personnel. This is why this Association has supported the domestic training and fellowship programs in the past and today is supporting the proposal for a similar program abroad.

Unfortunately, there are at the present time foreign scientists with special skills and talents who are not able to conduct the research investigations of which they are capable because of lack of adequate facilities. This is a situation which should be remedied and is covered in S.J. Res. 41.

There are laboratories and research institutions in foreign countries that presently can offer special training by highly qualified personnel utilizing facilities and subjects for study that are not available in the United States. American students should be encouraged to visit these places for extended periods to acquire the knowledge and training that can be provided. The type of activity to be encouraged is exemplified by the experience of an outstanding dental scientist who went recently to study in D'Allemagne's crystallography laboratory in Belgium and brought back invaluable information and technics which he is now teaching to others in the United States. Similarly, foreign health scientists should be encouraged to come to this country for the interchange of scientific knowledge, information and technics. Some excellent programs along this line already are in existence and have proved invaluable, but the surface has only been scratched. The Joint Resolution wisely makes provision for additional encouragement and support of this kind of worthwhile venture.

The Joint Resolution also would authorize support for research projects to be carried on in foreign countries. This phase of the proposal is of special interest to dentistry for there are particular populations in various parts of the world that would provide an extremely fertile field for epidemiological research studies. Much can be learned about the relation of nutrition and dietary habits to oral diseases from studies of people who live on severely restricted or primitive diets. Much could be learned from epidemiological studies in areas such as parts of India and Egypt where periodontal disease is endemic and begins at unusually early ages.

Nutritional and similar studies can most profitably be carried on in foreign villages or areas where the habits and customs are fairly easily defined rather than in the United States where undue complications arise from the high level of civilization and communication.

Existing facilities for coordinating international dental research and exchanging information are not as effective as they should be. The International Association for Dental Research, the leading international dental research organization, is doing an excellent job in so far as its limited resources permit. However, at best, its meetings and publications provide only a limited exchange of information.

The Fédération Dentaire Internationale, which this year will meet in New York in conjunction with this Association's 100th anniversary meeting, is making a significant contribution in bringing together some of the world's leading dental scientists. The Fédération also provides, through its publications, the means of disseminating an important portion of the world's dental research reports. However, in dentistry, as in other phases of the health sciences, the growing volume of research has overtaxed the existing facilities of established journals and library facilities. Translators, abstracters, indexers and publishers cannot keep up with the present load and will fall farther behind as progress in research continues. This situation is particularly acute regarding reports of dental research conducted in non-English speaking countries.

Specific examples could be given of instances where foreign scientists developed testing apparatuses, mechanical devices or clinical technics which are superior to and less expensive than those used in this country and where, because of lack of adequate means of communication, several years elapsed before reports of such developments reached our own scientists.

This kind of occurrence demonstrates the need for encouraging and supporting "international communication in the medical and biological sciences, international scientific meetings, conferences, translation services and publications" as provided in the Joint Resolution.

In passing, it might be of interest to describe briefly the international phase of the Association's forthcoming centennial session to be held in New York in September. It is expected that over 2,000 dentists from foreign countries will be in attendance. At least 100 of these will participate in the scientific program to be presented. Simultaneous translation will be provided at the scientific session as well as at several scientific conferences for foreign guests that are being organized cooperatively by the American Dental Association, the Fédération Dentaire Internationale and other agencies

such as the International Association for Dental Research, the American College of Dentists and the American Association of Dental Schools. Additionally, the American Dental Association is sponsoring postsession tours to encourage foreign representatives to visit our research and educational institutions and to confer with dental scientists in various parts of the country.

In this way, the Association seeks to make its own small contribution toward attaining a measure of international cooperation and mutual understanding of the health problems in our field of scientific endeavor.

The Association has only one suggestion for amending the provisions of S.J. Res. 41. It will be noted that on page 1 of S.J. Res. 41 there is reference to the establishment of the "National Institute for International Medical Research" whereas on page 14 thereof the Joint Resolution is referred to as "The International Health and Medical Research Act of 1959." It is recommended that in order to avoid confusion, in all instances where this or similar phraseology is used, the word "health" be substituted for the word "medical."

In summary, this Association endorses and offers its support of the purposes of S.J. Res. 41. We believe the short title, "The Health for Peace Act" is entirely descriptive and appropriate.

The framers of this legislation have selected for action an area in which there is both a vast need and an abundant opportunity. The need is for assistance and leadership in mobilizing a universal attack on human disease and disability. By seeking to fulfill this need, our country will have availed itself of an unequaled opportunity to strengthen its foreign policy by demonstrating to the world America's concern for the health and well-being of all people.

Communications

BUREAU OF MEMBERSHIP RECORDS

It is the responsibility of the Bureau to maintain the complete and current records of all dentists in the United States. This entails constant application of new information to some 100,000 individual records, and the task is increasing in volume and scope each year. As a matter of general interest, in 1958 complete records were developed for 3,100 newly graduated dentists, approximately 13,000 changes of location were reported, 900 life membership applications were reviewed, 1,700 general requests and inquiries regarding membership were answered, and 2,700 individual verifications of specific information were made. These areas alone reflect an approximate 10 per cent increase over the previous year, and are a relatively small part of the over-all operation of the Bureau.

In order to maintain complete and current records, constant screening of existing data is also necessary. In line with this thinking, information on 6,400 dentists presently in the federal dental services was verified and, within the past six-month period, the records of 10,000 dentists engaged in private practice were reviewed. Although such projects serve as valuable tools in record-keeping, the Bureau must depend primarily on its contact with the individual member, either directly or through the constituent or component society, if it is to perform successfully its function as liaison between the membership and the agencies of the Association. The simple act of keeping the Bureau advised of all new, pertinent information on each individual member will result in improved communications which, in turn, will assist the Association to serve the profession.

Admission requirements for nonresident dentists to United States dental school degree programs. Requisites for licensure and practice

COUNCIL ON DENTAL EDUCATION

1. *General* • The Council on Dental Education has no mechanism at present for the accreditation of dental schools in countries outside of the United States, except Canada. Graduates of schools located outside of the United States and Canada who wish to practice dentistry in this country must earn a D.D.S. or D.M.D. degree and be licensed by a state board of dental examiners.

Those who have surveyed dental education programs in the United States and abroad recognize that there are great differences in the programs from various points of view. Some schools accept students who are much younger and who have had little formal education prior to dental study; others accept students only after a great deal of college study. Some schools have lengthy programs of considerable depth and others provide a less comprehensive program. Some schools require a medical school program prior to the individual's study of dentistry which again presents great differences. Accreditation of a school attests to the fact that the graduate of a school has attained a certain level of knowledge and skill and also a level of maturity to work on patients. Licensing boards in the United States have established common and basic standards upon which to evaluate the competence of a dental school graduate. Similarly, dental schools in the United States have come to interpret competence in terms of the same basic standards that all of the United States schools use for admissions and for their curriculum. Many graduates of dental schools outside of the United States have made outstanding records at schools in this country and some students find that they need to spend considerable time in order to become familiar with the language as well as with some philosophies of dental practice. The schools which accept these students expect them to demonstrate their ability in the same manner as they expect transfers from other dental schools in this country to demonstrate competence and ability before admitting them. The Council advises United States dental schools to evaluate aptitudes and competence of individuals who apply, regardless of whether they have had dental study previously or whether they are new applicants recently graduated from a college or university. In the Council's view, it is preferred that dental schools make an individual evaluation of an applicant's competence, rather than to rely on evalution or accreditation of a university program that can be accredited only at irregular intervals. It is probable that the Council will never establish a formalized program for evaluating and accrediting all dental schools outside of the United States.

Although United States dental schools currently do not have facilities to accept foreign dental school graduates in great numbers into existing degree programs, the Council on Dental Education feels, within the limitations of available facil-

ities at the schools, that dental schools in this country should be encouraged to continue their present efforts to accept students who have obtained a dental education from schools located outside of the United States and Canada. The Council is also on record requesting that dental schools try to provide education and experience for those who wish to study in this country with a view to returning to their own countries to practice or to teach.

At the present time, United States dental schools can accept a greater number of applicants to advanced or graduate educational programs in dentistry than to its programs which lead to the dental degree; that is, D.D.S., or D.M.D. Graduates of foreign dental schools who are expecting to return to their own countries to teach or practice dentistry are urged to consider the advanced study programs that are currently offered by the United States schools rather than programs leading to the D.D.S. or D.M.D. degree. Also available to graduates of foreign dental schools are approved hospital dental internships and residencies. Lists of both types of advanced study programs are available from the Council on Dental Education upon request.

2. *Educational Requirements* • The American Dental Association has delegated to the Council on Dental Education the responsibility of accrediting dental schools in the United States. The Council has determined that graduates of foreign dental schools who wish to earn a D.D.S. or D.M.D. degree will be expected to complete from one to four years of education in a United States dental school. Any institution that grants a degree understandably expects the student to be in residence at that institution for a given length of time even though he may already have many of the competencies represented by the degree which is sought by the student. One year of residency is usually the minimum time required by all institutions if they are to grant a degree to a student. Each school is responsible for its own admissions requirements and decides on the admission of each applicant. Some schools have devised comprehensive placement examinations for applicants from foreign schools. In accordance with the results obtained from these examinations, school authorities may require that applicants complete one year of dental school education, or more, as is needed. The majority of applicants who already have completed dental study outside of the United States would be required to study in a United States dental school for at least two years, to earn the D.D.S. or D.M.D. degree.

Because the Council establishes these specific requirements for all who receive a dental degree, it is necessary that the dental school choose applicants who can derive most benefit from the curriculum and that the school place transfer and new students at a point in the curriculum which is compatible with their experience, previous education, and other qualifications.

3. *Capacity of United States Dental Schools to Receive Graduates of Foreign Dental Schools* • Not all 47 United States dental schools are able to accept foreign dental school graduates for the United States degree program. Some of our schools are state-supported and are required by legislatures to restrict undergraduate enrollment to residents of a single state or region. Of the schools which are able to accept graduates of foreign schools into their undergraduate programs, only a few places each year are available because openings or vacancies are created when beginning students fail to progress in the program. Few students are lost through failure and drop-out, and hence, very few vacancies occur.

Twenty-one United States schools, at the present time, accept graduates from

foreign dental schools with advanced undergraduate standing. An average total number of 77 students from schools of other countries are accepted in 21 schools each year. A list of schools having facilities to accept graduates of foreign dental schools may be obtained from the Council on Dental Education on request.

4. *Licensure by State Boards of Dental Examiners* • Only persons expecting to remain in the United States to practice dentistry after graduating from a United States dental school must obtain a license to practice from a state board of dental examiners. The practice of dentistry in the United States is subject to the licensure laws and regulations of individual states, territories, districts and dependencies. Boards have varying licensure requirements and these can be studied in the Council's pamphlet, *Requirements and Registration Data: State Dental Examining Boards*. It is emphasized that laws and regulations of states and territories require that applicants for licensure examinations hold a D.D.S. or D.M.D. degree from an accredited United States or Canadian dental school.

5. *Correspondence and Inquiries* • A list of schools having facilities to train graduates of dental schools outside of the United States is available on request from the Council on Dental Education. All inquiries relating to the admission of foreign dental school graduates to professional degree or advanced programs in a United States dental school should be mailed direct to the schools.

Additions to the Library

BUREAU OF LIBRARY AND INDEXING SERVICE

The books listed here have been added recently to the Library collection. Requests for this material, available on loan to all members of the Association, should be addressed to the Bureau of Library and Indexing Service. There is no charge for borrowing books, but there is a minimal charge of one dollar for package libraries. Practically all the dental journals in the world at present are available to members on loan. Lists of books and package libraries are also available on request.

BOOKS

Adriani, John. Fundamentals of general anesthesia for students and practitioners of dentistry. Springfield, Ill., Thomas, 1959. 213 p. $6.50.

Agren, Erik. Radioactive sulphur as benzidine sulphate; a methodological study with special reference to S^{35}-labelled penicillin in oral surgery. (Acta Radiologica, Sup. 166.) Stockholm, 1958. 108 p. Sw. Kr. 30.

Aguilera, Alfonso & Others. Tratamiento de conductos radiculares en dientes temporales. (Seminario para optar al título de doctores en odontologia—Pontificia Universidad Católica Javeriana.) Bogota, 1957. 69 p.

American Dental Association. Bank dental post payment plan; symposium, 99th annual session, November 10-13, 1958, Dallas, Texas. Dallas, Preston State Bank, 1958. 43 p. Mimeo.

American Dental Association. Council on Dental Trade and Laboratory Relations. A symposium on programs affecting

relations between the dental profession and the dental laboratory group, September 29-30, 1958. Chicago, 1958. 94 p. Mimeo.

American Medical Association. A planning guide for establishing medical practice units. Chicago, 1955? 84 p.

Asociacion Odontologica Argentina. Indice de la literatura dental periódica en castellano y portugués, 1955. Buenos Aires, 1958. 146 p. $8.

Association pour les Recherches sur les Parodontopathies (ARPA Internationale). Les parodontopathies: rapports et communications du xv^me^ Congrès de l'Association, Paris, 7-12 Juillet 1958. Geneva, Librairie de l'Université, 1958. 286 p. $10.50.

Berke, J. D. The linked arch appliance. New York, Charles Press, 1957. 60 p. $7.95.

Buchheimer, Naomi. Let's go to a dentist. Illustrated by Ruth Van Sciver. New York, Putnam's Sons, 1959. 47 p. $1.95.

Castro, L. F. & Others. Coronas y puentes (Seminario para optar al título de doctores en odontología — Pontificia Universidad Católica Javeriana.) Bogota, 1957. 103 p.

Chicago Dental Society. The profession you are about to enter; a panel program for junior and senior dental students and their wives at the Midwinter Meeting, February 2, 1958. Washington, American Dental Trade Association, 1958. 24 p. Mimeo.

Congrès Français de Stomatologie, XV^e^, Paris, 23-28 Septembre 1957; rapports. Paris, Masson, 1957. 284 p. $7.

Current Therapy—1959; latest approved methods of treatment for the practising physician. Philadelphia, Saunders, 1959. 781 p. $12.

Denmark. Indenrigsministeriet. Betaenking verdrørende forebyggelse af caries ved fluoridtilforsel. Afgivet af det af indenrigsministeriet den 4. oktober 1955 nedsatte udvalg. (Betaenking Nr.212.) Copenhagen, 1959. 88 p.

Dental Clinics of North America, March 1959. Symposium on crown and bridge prosthodontics. Philadelphia, Saunders, 1959. 277 p.

Eggers Lura, H. Die Biologie der Knochengewebe; die biochemischen Gewebsreaktionen der Knochen nach dem derzeitigen Stand der Forschung. (Die biologische Forschung in der Zahnheilkunde No. 2.) Stuttgart, Lege Artis, 1957. 63 p. DM9.80.

Film Council of America. Sixty years of 16mm film, 1923-1983. Evanston, Ill., 1954. 220 p.

Goldman, H. M. & Others. An introduction to periodontia. (Postgraduate dental lecture series.) St. Louis, Mosby, 1959. 346 p. $7.75.

Gomez, Alicia & Others. Curetaje apical. (Seminario para optar al título de doctores en odontología — Pontificia Universidad Católica Javeriana.) Bogota, Editorial Kelly, 1957. 57 p.

Gomez, Dolly & Others. Importancia de la preparación mecánica de la cámara y de los conductos radiculares. (Seminario para optar al título de doctores en odontología— Pontificia Universidad Católica Javeriana.) Bogota, 1958. 69 p.

Guerrero, Alba; Jaramillo, German & Pinto, Arturo. Estudio de la articulación temporomaxilar en relación con las anomalías dento-máxilo-faciales. (Seminario para optar al título de doctores en odontología —Pontificia Universidad Católica Javeriana.) Bogota, Editorial Kelly, 1957. 124 p.

Heartsill, C. E. Molars away! Tips and titters for people soon to get false teeth. New York, Exposition Press, 1958. 47 p. $2.75.

Indiana State Dental Association. 100 years of progress, 1858-1958. Indianapolis, 1958. 40 p.

Johnson, H. H. & Others. Medical facts for lawyers. (Law-medicine series, Vol. 2.) Cleveland, Multi-Stat Copy Company, 1957. 138 p. $4.40.

Johnson, W. W. Prescription writing. (Practical dental monographs, March, 1959.) Chicago, Year Book Publishers, 1959. 29 p. $1.50.

Kapp, R. O. The presentation of technical information. New York, Macmillan, 1958. 147 p. $2.95.

Koch, Friedrich. Medizinische Demographien westdeutscher Stadt-und Landkreise. (Schriftenreihe aus dem Gebiete des öffentlichen Gesundheitswesens No. 5.) Stuttgart, Thieme, 1957. 121 p. DM7.50.

Lebourg, Lucien & Hénault, Maurice. Introduction à la clinique odontostomatologique. Paris, Prélat, 1958. 414 p. 4,700 fr.

Lepp, F. H. & Baptista, M. L. Consideraciones sobre investigación científica y enseñanza universitaria: a la vez una invitación para coloborar en una nueva asociación estomatológica para la investigación en patología buco-dental. (Reprinted from *Revista de la Universidad del Zulia.*) Maracaibo, 1958. 20 p.

Martinez, Alvaro & Granados, R. D. Síntesis deontológica en odontología. (Seminario para optar al título de doctores en odontología — Pontificia Universidad Católica Javeriana.) Girardot, Editorial Mariposa, 1957. 76 p.

Montgomery, G. L. Pathology for students

of dentistry. 2d ed. Edinburgh, Livingstone, 1958. 307 p. $8.50.

NATIONAL RESEARCH COUNCIL. COMMITTEE ON PATHOLOGIC EFFECTS OF ATOMIC RADIATION. A commentary on the report of the United Nations Scientific Committee on the Effects of Atomic Radiation. (National Research Council publication 647.) Washington, 1959. 5 p.

NYBORG, HILDING. Capping of the pulp; the processes involved and their outcome. A report of the follow-ups of a clinical series. (Reprinted from *Odontologisk Tidskrift*, Vol. 66, No. 4, 1958.) Gothenburg, 1958. 68 p.

ONTARIO. DEPARTMENT OF HEALTH. DENTAL STATISTICS AND RESEARCH SECTION. The evaluation of community dental health; a system for recording & statistical analysis. Toronto, 1958. 70 p. Mimeo.

PERILLA, LAURA & ARDILA, NHORA. Terapéutica de la hiperestesia dentinal. (Tesis—Pontificia Universidad Católica Javeriana.) Bogota, 1958. 96 p.

PETERSON, SHAILER, ed. Clinical dental hygiene. St. Louis, Mosby, 1959. 348 p. $6.75.

ROMERO, JAVIER & FASTLICHT, SAMUEL. El arte de las mutilaciones dentarias. (Enciclopedia mexicana de arte 14.) Mexico, D. F., Ediciones Mexicanas, 1951. 85 p.

SAMSON, EDWARD. Holy tooth. Bristol, Wright, 1958. 125 p. $3.20.

SANDBERG, NILS. Katalog över Göteborgs Tandläkare-Sällskaps Bibliotek: upprättad i Oktober 1958. Göteborg, Elanders Boktryckerei Aktiebolag, 1958. 148 p.

SCHMITH, OTTO. Schulärztliche Fragen. (Schriftenreihe aus dem Gebiete des öffentlichen Gesundheitswesens No. 6.) Stuttgart, Thieme, 1957. 197 p. DM12.

SHILLINGTON, G. B. Handbook of the fundamentals of partial denture planning. Ottawa, Canada, Queen's Printer, 1957. 70 p. $1.

TV FILM SOURCE BOOK: "free film." New York, Broadcast Information Bureau, 1959. 428 p. $20.

THOMPSON, E. T. & HAYDEN, A. C. Textbook and guide to the *Standard nomenclature of diseases and operations*. 2d ed. Chicago, Physicians' Record Co., 1958. 740 p. $9.

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE. OFFICE OF EDUCATION. A directory of 3360 16mm film libraries. Washington, Govt. Print. Off., 1959. 236 p. $1.

VASIL'EV, G. A. Chirurgiia zubov i polosti rta. 2d ed. Moscow, Medgiz, 1957. 372 p. $1.

VICKERY, B. C. & FOSKETT, D. J. Classification and indexing in science. New York, Academic Press, 1958. 185 p. $5.50.

VILLEGAS, I. A.; RAMIREZ, I. A. & OSPINA, E. R. Estudio radiográfico de la articulación témporo-mandibular. (Seminario para optar al título de doctoras en odontología—Pontificia Universidad Católica Javeriana.) Bogota, 1958. 165 p.

WAINWRIGHT, W. W. & VILLANYI, A. A. Radiation hazards. (Practical dental monographs, January, 1959.) Chicago, Year Book Publishers, 1959. 31 p. $1.50.

WENGER, FRANZ & BAPTISTA, M. L. Epulis; estudio de veintitrés casos especialmente en sus aspectos anatómico-patalógicos. (Reprinted from *Revista de la Universidad del Zulia*.) Maracaibo, 1958. 29 p.

WHITE, C. M. Your dentist and you; a book to improve the patient's understanding. New York, American Press, 1958. 91 p. $2.50.

WILKINS, E. M.; MCCULLOUGH, P. A. & STICKELS, C. M. Clinical practice of the dental hygienist. Seattle, Univ. of Washington Press, 1958. 431 p. Mimeo. $6.

WOLFF, H. G. & WOLF, STEWART. Pain. (American lecture series No. 333.) Springfield, Ill., Thomas, 1958. 121 p. $4.25.

THE YEAR BOOK OF DENTISTRY, 1958-59. Chicago, Year Book Publishers, 1959. 492 p. $6.50.

An inventory of dentists: age, membership, type of practice, dental school and location

BUREAU OF ECONOMIC RESEARCH AND STATISTICS

The age distribution of dentists is a fundamental factor in evaluating the adequacy of present and future dental manpower. The principal source of information on the ages of dentists is the *American Dental Directory*, published annually by the American Dental Association. The *Directory* includes various other basic data on dentists.

The 1958 edition of the *Directory*, which contained information as of mid-1957, listed 101,291 dentists in the United States and its territories and possessions, including both active and retired dentists. In this study, the following data on these dentists were machine tabulated: year of birth, sex, dental school attended, year of graduation, American Dental Association membership status, character of practice, city size and state. These items of information were available for the large majority, but not all dentists. Dentists for whom an item of information was missing were omitted in calculation of averages and percentages involving that item.

The age distribution of dentists according to membership in the American Dental Association is shown in Table 1. The mean age of active members of the Association was 45.0 years, compared to 74.2 for life members and 54.6 for nonmembers. More dentists were in their 30's (26.1 per cent) than in any other 10-year age group, followed by dentists in their 50's (20.8 per cent) and dentists in their 40's (18.9 per cent).

Retired dentists constitute a large proportion of the nonmembers of the Association. Of all nonmembers, 32.1 per cent were 65 and older, compared to 10.9 per cent of all members. Among active members of the Association, only 5.9 per cent were 65 and older.

The percentage of dentists in each age bracket holding active and life membership is shown in Table 2. More than 90 per cent of dentists aged 30 through 44 were active members. Beyond age 44 the percentage of members decreased with each age bracket.

Statistics on the ages of dentists according to state and region are shown in Tables 3 and 4. Among the regions, the lowest mean ages were in the Southwest (47.0) and Southeast (47.5) and the highest in the Northwest (50.8) and Central (50.5). Among the individual states, mean ages of dentists were above 52 in Kansas (53.2), Maine (52.9), Missouri (52.8), Iowa (52.7) and Nebraska (52.1). Mean ages were below 46 in two states: Tennessee (45.7) and Idaho (45.9).

The mean ages of dentists in the federal dental services were all in the 30's with the exception of dentists in the Veterans Administration, whose mean age of 49.5 was slightly above the national mean. Dentists in the Air Force were considerably younger on the average than those in the Army and Navy.

Of all dentists listed in the 1958 *Directory*, 1,254, or 1.2 per cent, were women. In general, the proportion of dentists in age brackets below 50 was lower for women than for men (Table 5). An exception was the "35 to 39" age group, and this probably reflects the fact that many men who were potential dental

Table 1 • Percentage distribution of dentists according to age, by membership status

Age	Members			Non-members	All dentists
	Active	Life	All members		
–24	.9	.0	.9	.6	.8
25–29	8.9	.0	8.4	11.8	9.0
30–34	15.1	.0	14.3	6.6	12.9
35–39	15.4	.0	14.6	6.7	13.2
40–44	11.4	.0	10.8	5.0	9.7
45–49	10.6	.0	10.0	5.7	9.2
50–54	11.7	.0	11.1	7.8	10.5
55–59	10.8	.0	10.2	10.5	10.3
60–64	9.3	.0	8.8	13.2	9.6
65–69	4.1	25.7	5.2	10.7	6.2
70–74	1.2	30.3	2.8	8.1	3.7
75–79	.4	24.4	1.7	6.9	2.7
80–	.2	19.6	1.2	6.4	2.2
Total	100.0	100.0	100.0	100.0	100.0
Mean	45.0	74.2	46.6	54.6	48.0
Median	44	73	45	57	47

students were called into military service during World War II. Since the late 1940's there has been a downward trend in the number of women graduating from dental schools.

Table 2 • Percentage of dentists holding specified membership status, by age

Age	Members			Non-members
	Active	Life	All members	
24	88.2	.0	88.2	11.8
25–29	76.5	.0	76.5	23.5
30–34	90.7	.0	90.7	9.3
35–39	90.8	.0	90.8	9.2
40–44	90.7	.0	90.7	9.3
45–49	88.8	.0	88.8	11.2
50–54	86.6	.0	86.6	13.4
55–59	81.6	.0	81.6	18.4
60–64	75.3	.0	75.3	24.7
65–69	50.7	18.3	69.0	31.0
70–74	25.3	35.7	61.0	39.0
75–79	12.6	40.5	53.1	46.9
80–	6.4	40.1	46.5	53.5
All ages	76.1	4.2	80.3	19.3

Table 6 shows that two out of five women dentists are located in one region — the Middle East.

Among dentists alive in 1957, 24 was the modal (most common) age at graduation (Table 7). Between 1910 and 1929, 23 was the modal graduation age. From 1930 to 1949, it was 24. The mode increased to 27 between 1950 and 1954, when graduating classes were made up largely of veterans, and decreased to 25 during the period 1955 through 1957.

The mean age at graduation for all classes since 1910 was 25.9 and the median 25. In every graduating class there are graduates at least 10 or 15 years older than the modal age, hence the difference in the mean, median and mode.

Dentists in very small and very large cities were older on the average than dentists in medium-sized cities (Table 8). The mean age was lowest in cities of 10,000 to 25,000 population.

Of the nonmembers, 19.6 per cent were

Table 3 • Average age of dentists by state, region and federal dental service

Region and state	Mean	Median
New England	49.9	48
Connecticut	47.5	45
Maine	52.9	54
Massachusetts	51.0	52
New Hampshire	48.2	46
Rhode Island	48.5	46
Vermont	50.9	49
Middle East	48.9	48
Delaware	46.3	43
District of Columbia	49.8	49
Maryland	46.3	43
New Jersey	47.7	47
New York	48.9	48
Pennsylvania	49.7	50
West Virginia	49.8	50
Southeast	47.5	44
Alabama	46.5	41
Arkansas	47.5	44
Florida	49.0	46
Georgia	47.6	44
Kentucky	49.0	46
Louisiana	48.3	47
Mississippi	46.8	43
North Carolina	47.3	44
South Carolina	47.7	43
Tennessee	45.7	41
Virginia	46.6	43
Southwest	47.0	44
Arizona	46.0	43
New Mexico	47.3	44
Oklahoma	50.0	49
Texas	46.3	43
Central	50.5	51
Illinois	50.9	51
Indiana	50.4	51
Iowa	52.7	54
Michigan	47.5	47
Minnesota	51.4	53
Missouri	52.8	54
Ohio	49.9	50
Wisconsin	50.4	52
Northwest	50.8	51
Colorado	50.7	51
Idaho	45.9	40
Kansas	53.2	54
Montana	49.3	48
Nebraska	52.1	54
North Dakota	51.8	53
South Dakota	51.5	52
Utah	47.3	41
Wyoming	48.9	48
Far West	48.9	48
California	49.0	48
Nevada	48.0	44
Oregon	48.9	47
Washington	48.4	46
Federal Dental Services	34.7	29
Air Force	30.8	28
Army	33.5	29
Navy	34.0	29
Public Health Service	36.1	33
Veterans Administration	49.5	50
Continental United States	48.0	47
Outlying Areas		
Alaska	46.7	48
Hawaii	44.3	42
Puerto Rico	42.5	38
Other outlying areas	50.6	52
Total	48.0	47

Table 4 • Percentage distribution of dentists according to age, by region

Age	New England	Middle East	South-east	South-west	Central	North-west	Far West	Federal dental services
-24	.3	.7	1.0	.9	.8	.7	.5	1.8
25-29	5.1	5.0	6.5	6.2	5.4	5.1	4.6	50.4
30-34	12.2	11.4	17.4	16.9	11.9	14.5	14.0	10.1
35-39	14.3	12.8	15.9	16.9	11.5	13.8	15.6	8.8
40-44	11.4	11.3	10.0	9.9	8.4	6.6	10.1	8.3
45-49	9.0	11.8	7.8	7.9	8.7	6.2	8.4	8.5
50-54	8.4	12.0	7.8	10.8	12.0	9.8	10.4	6.4
55-59	9.6	11.8	8.5	8.3	12.1	9.4	11.1	3.0
60-64	11.1	10.4	8.1	7.8	11.7	11.5	9.8	1.5
65-69	7.7	5.8	6.6	5.9	7.3	8.9	6.2	1.0
70-74	4.7	3.2	4.6	4.1	4.3	6.0	3.9	.2
75-79	3.5	2.1	3.4	2.3	3.2	4.2	2.9	
80-	2.7	1.7	2.4	2.1	2.7	3.3	2.5	0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

in cities of over 1,000,000 population, compared to only 14.8 per cent of the members (Table 9). The relative difference was even greater in towns of under 2,500, in which 13.0 per cent of the nonmembers and only 9.2 per cent of the members were located. The "median city size" was in the 50,000 to 100,000 city-size category for both members and nonmembers, that is, half of the dentists were in larger and half in smaller cities.

As shown in Table 10, 85.6 per cent of all dentists in cities of 25,000 to 50,000 population were members of the Association. The percentage decreased with each larger and each smaller city-size category. It was lowest in the smallest places, 70.6 per cent of dentists in towns of under 1,000 being members of the Association. However, the percentage of dentists who were life members was greatest in the smallest places.

Although specialists as a group were on the average about one year older than general practitioners, pedodontists (42.0 years) and oral pathologists (44.8 years) were relatively young (Table 11). Highest mean ages among the specialists were for prosthodontists (52.9) and periodontists (51.1). Interns and residents averaged 28.1 years of age. At the other extreme were dentists employed by commercial agencies, who averaged 61.1 years of age.

Table 5 • Percentage distribution of dentists according to age, by sex

Age	Men	Women
-24	.8	.5
25-29	9.0	7.0
30-34	13.0	9.0
35-39	13.2	13.7
40-44	9.7	9.4
45-49	9.3	7.5
50-54	10.5	7.6
55-59	10.2	13.9
60-64	9.6	12.6
65-69	6.2	8.0
70-74	3.7	4.7
75-79	2.7	3.3
80-	2.1	2.8
Total	100.0	100.0
Mean	48.0	50.8
Median	47	52

Table 6 • Percentage distribution of dentists according to region, by sex

Region	Men	Women
New England	7.0	7.5
Middle East	28.8	41.7
Southeast	12.6	7.9
Southwest	5.0	3.7
Central	28.4	20.6
Northwest	5.2	3.0
Far West	13.0	15.6
Total	100.0	100.0

The percentage distribution of dentists listed in the *Directory* according to "character of practice" is shown in Table 12. "Character of practice" is actually two classifications: type of practice and type of employer. For this reason some of the figures require explanation. For example, only .7 per cent are classified as being "on staff of dental school," because some dental teachers are also engaged in private practice and prefer to be listed according to type of practice. This is probably true of other "types of employers." Dentists in the federal dental services are listed in separate sections of the *Directory*; "character of practice" codes for these dentists refer to type of practice rather than type of employer.

Of the women dentists, 3.2 per cent specialized in orthodontics and .9 per cent in pedodontics, compared to 1.8 per cent and .1 per cent, respectively, for men dentists. The proportion specializing in periodontics was also greater for women than for men.

It will be noted that only 1.8 per cent of all dentists were listed as retired. It is estimated that 10.6 per cent of all dentists were retired; however, no method has been devised to obtain complete and current information on retirement for the *Directory*. Of the 101,291 dentists alive at mid-1957, it is estimated that 90,550

Table 7 • Percentage age distribution at graduation of dentists graduating in five-year periods since 1910

Age at graduation	Year of graduation										All dentists graduating since 1910
	1910–1914	1915–1919	1920–1924	1925–1929	1930–1934	1935–1939	1940–1944	1945–1949	1950–1954	1955–1957	
20	2.7	2.5	.4	.3	.1	.1	.1	.1	—	—	.5
21	10.6	10.8	4.3	3.2	.8	.6	.4	1.1	—	.0	2.6
22	15.1	17.1	13.9	12.4	5.3	4.8	3.9	7.7	.4	.2	7.3
23	15.7	17.3	19.0	18.7	16.6	15.1	15.0	20.2	2.3	3.5	13.5
24	14.2	14.0	16.2	18.1	21.9	20.7	21.3	20.8	7.3	15.1	16.5
25	10.9	10.4	12.0	13.3	17.7	18.6	18.9	14.8	10.6	20.6	14.8
26	8.6	7.7	9.2	9.4	12.2	13.6	13.9	8.1	13.3	16.9	11.6
27	6.0	5.5	7.2	6.3	8.2	9.0	8.8	6.2	14.3	9.9	8.6
28	4.6	4.0	5.1	4.7	5.7	5.5	5.5	4.3	12.2	8.0	6.4
29	2.9	2.9	3.7	3.5	3.4	3.5	3.6	3.4	10.6	6.5	4.9
30	2.6	2.0	2.8	2.7	2.1	2.3	2.5	2.6	7.6	4.4	3.4
31	2.0	1.5	1.8	2.2	1.6	1.7	1.5	2.4	5.8	3.5	2.6
32	1.0	1.0	1.2	1.4	1.3	1.1	1.0	1.7	5.0	2.9	2.0
33	1.0	.8	.9	1.1	.7	.8	.8	1.5	3.4	2.4	1.5
34	.7	.9	.6	.8	.6	.8	.8	1.3	2.4	1.5	1.1
35–	1.4	1.6	1.7	1.9	1.8	1.8	2.0	3.8	4.8	4.6	2.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean	24.6	24.5	25.1	25.2	25.5	25.7	25.7	25.7	28.3	27.2	25.9
Median	24	24	24	24	25	25	25	25	28	26	25

Table 8 • Mean age of dentists by city size

City size	Mean age
Under 1,000	51.3
1,000–2,500	50.2
2,500–5,000	48.6
5,000–10,000	48.0
10,000–25,000	47.7
25,000–50,000	48.0
50,000–100,000	49.0
100,000–250,000	48.4
250,000–500,000	49.3
500,000–1,000,000	51.0
Over 1,000,000	51.0

Table 9 • Percentage distribution of dentists according to city size, by membership status

City size	Members			Non-members	All dentists
	Active	Life	All members		
Under 1,000	3.3	4.9	3.3	6.0	3.8
1,000–2,500	5.8	7.5	5.9	7.0	6.1
2,500–5,000	6.7	6.9	6.7	6.5	6.7
5,000–10,000	8.6	7.6	8.6	7.8	8.4
10,000–25,000	12.9	11.7	12.8	10.0	12.3
25,000–50,000	10.3	10.1	10.2	7.5	9.7
50,000–100,000	9.1	10.5	9.2	7.6	8.9
100,000–250,000	9.9	9.8	9.9	8.5	9.7
250,000–500,000	9.0	9.8	9.1	8.2	8.9
500,000–1,000,000	9.4	10.2	9.5	11.3	9.8
Over 1,000,000	15.0	11.0	14.8	19.6	15.7
Total	100.0	100.0	100.0	100.0	100.0

Table 10 • Percentage of dentists holding specified membership status, by city size

City size	Members			Non-members
	Active	Life	All members	
Under 1,000	64.7	5.9	70.6	29.4
1,000–2,500	68.9	5.8	74.7	25.3
2,500–5,000	76.9	4.8	81.7	18.3
5,000–10,000	78.5	4.2	82.7	17.3
10,000–25,000	80.3	4.5	84.8	15.2
25,000–50,000	80.8	4.8	85.6	14.4
50,000–100,000	78.4	5.5	83.9	16.1
100,000–250,000	78.6	4.8	83.4	16.6
250,000–500,000	77.6	5.1	82.7	17.3
500,000–1,000,000	73.6	4.9	78.5	21.5
Over 1,000,000	73.3	3.3	76.6	23.4
All dentists	76.1	4.2	80.3	19.7

Table 11 • Average age of dentist according to character of practice

Character of practice	Mean	Median
General practitioner	47.6	47
Specialist	48.5	47
Oral surgeon	49.9	49
Orthodontist	47.5	46
Pedodontist	42.0	41
Periodontist	51.1	50
Prosthodontist	52.9	51
Oral pathologist	44.8	39
Public health dentist	47.3	50
Dental school	44.3	42
Intern or resident at accredited hospital	28.1	27
Public or industrial dental program	48.7	50
Dental society	51.4	51
Commercial agency	61.1	61
Retired dentist	72.9	74
Other profession or occupation	58.5	57
All dentists	48.0	47

were active in the profession, including the graduates of 1957. Of this number, an estimated 89,875 were in the continental United States and 675 in territories and possessions.

The number of living graduates of each dental school, according to location in 1957, is shown in Table 13. Although the Middle East had more dentists than any other region, the dental schools in the Central region held a considerable lead in total number of graduates.

Of the 93,925 dentists known to have graduated from a dental school which was active in 1957, 54.5 per cent were in the same state as the school from which they graduated, 17.4 per cent were in the same region but not the same state, 19.9 per cent were in other regions and

Table 12 • Percentage distribution of dentists according to character of practice, by sex

Character of practice	Men	Women	All dentists
General practitioner	93.4	85.5	93.3
Specialist	3.3	5.0	3.4
Oral surgeon	1.0	1.0	1.0
Orthodontist	1.8	3.2	1.8
Pedodontist	.1	.9	.2
Periodontist	.2	.9	.2
Prosthodontist	.2	.0	.2
Oral pathologist	—	.0	—
Public health dentist	—	.0	—
Dental school	.7	1.9	.7
Intern or resident at accredited hospital	.4	.2	.4
Public or industrial dental program	.3	1.5	.3
Dental society	—	.0	—
Commercial agency	.1	.1	.1
Retired dentist*	1.7	5.8	1.8
Other profession or occupation	—	.0	—
Total	100.0	100.0	100.0

*Approximately 10.6 per cent of all dentists are retired, but no method has been devised to obtain complete and current information on retirement for the Directory.

Table 13 • Distribution of dentists by dental school from which they graduated and by location in 1957 with relation to dental school

Region, state and dental school	Located in same state		In same region, not in same state		In other region		In federal dental service		Total	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
New England	2,372	53.1	959	21.4	898	20.1	242	5.4	4,471	100.0
Harvard University	663	55.5	228	19.1	261	21.8	43	3.6	1,195	100.0
Tufts University	1,709	52.2	731	22.3	637	19.4	199	6.1	3,276	100.0
Middle East	14,838	52.0	6,834	23.9	4,672	16.4	2,186	7.7	28,530	100.0
Georgetown University	394	22.3	665	37.7	520	29.4	188	10.6	1,767	100.0
Howard University	136	15.1	306	34.0	358	39.8	100	11.1	900	100.0
University of Maryland	827	22.8	1,110	30.7	1,408	38.9	277	7.6	3,622	100.0
Columbia University	1,281	77.3	106	6.4	165	10.0	105	6.3	1,657	100.0
New York University	4,715	80.6	465	7.9	327	5.6	344	5.9	5,851	100.0
University of Buffalo	1,609	85.3	41	2.2	87	4.6	150	7.9	1,887	100.0
Temple University	2,092	51.1	1,089	26.6	553	13.5	358	8.8	4,092	100.0
University of Pennsylvania	1,364	26.3	2,622	50.7	848	16.4	343	6.6	5,177	100.0
University of Pittsburgh	2,420	67.6	430	12.0	406	11.4	321	9.0	3,577	100.0
Southeast	4,341	41.1	3,406	32.3	1,797	17.0	1,010	9.6	10,554	100.0
University of Alabama	204	69.9	14	4.8	7	2.4	67	22.9	292	100.0
Emory University	848	26.0	1,926	58.9	287	8.8	206	6.3	3,267	100.0
University of Louisville	824	45.1	224	12.3	620	33.9	159	8.7	1,827	100.0
Loyola University New Orleans	635	54.9	215	18.6	167	14.4	140	12.1	1,157	100.0
University of North Carolina	100	62.5	9	5.6	1	0.6	50	31.3	160	100.0
Meharry Medical College	82	9.8	270	32.2	424	50.5	63	7.5	839	100.0
University of Tennessee	872	48.7	508	28.4	180	10.0	232	12.9	1,792	100.0
Medical College of Virginia	776	63.6	240	19.7	111	9.1	93	7.6	1,220	100.0
Southwest	2,095	76.7	143	5.2	219	8.0	277	10.1	2,734	100.0
Baylor University	1,121	71.6	135	8.6	159	10.2	150	9.6	1,565	100.0
University of Texas	974	83.3	8	0.7	60	5.1	127	10.9	1,169	100.0

Table 13 • Distribution of dentists (cont.)

Region, state and dental school	Located in same state		In same region, not in same state		In other region		In federal dental service		Total	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Central	19,384	54.4	3,474	9.8	9,667	27.2	3,072	8.6	35,597	100.0
Loyola University, Chicago	2,349	58.1	563	13.9	843	20.9	286	7.1	4,041	100.0
Northwestern University	1,508	37.4	720	17.8	1,473	36.5	333	8.3	4,034	100.0
University of Illinois	1,027	57.8	112	6.3	464	26.1	174	9.8	1,777	100.0
Indiana University	1,475	64.4	239	10.5	399	17.4	177	7.7	2,290	100.0
State University of Iowa	1,272	60.8	144	6.9	483	23.1	193	9.2	2,092	100.0
University of Detroit	764	83.4	18	2.0	49	5.3	85	9.3	916	100.0
University of Michigan	2,032	69.6	160	5.5	533	18.2	195	6.7	2,920	100.0
University of Minnesota	1,927	59.1	197	6.0	828	25.4	308	9.5	3,260	100.0
University of Kansas City	801	25.2	82	2.6	2,022	63.5	277	8.7	3,182	100.0
St. Louis University	787	32.9	545	22.8	829	34.6	232	9.7	2,393	100.0
Washington University	515	34.1	294	19.5	580	38.4	120	8.0	1,509	100.0
Ohio State University	1,792	74.2	43	1.8	328	13.5	253	10.5	2,416	100.0
Western Reserve University	1,230	70.9	28	1.6	342	19.7	136	7.8	1,736	100.0
Marquette University	1,905	62.9	329	10.8	494	16.3	303	10.0	3,031	100.0
Northwest	808	39.2	351	17.1	649	31.5	252	12.2	2,060	100.0
Creighton University	367	32.5	202	17.9	415	36.8	144	12.8	1,128	100.0
University of Nebraska	441	47.3	149	16.0	234	25.1	108	11.6	932	100.0
Far West	7,344	73.6	1,181	11.8	809	8.1	645	6.5	9,979	100.0
College of Physicians and Surgeons	1,472	89.7	26	1.6	63	3.8	81	4.9	1,642	100.0
University of California	1,770	88.9	33	1.7	120	6.0	67	3.4	1,990	100.0
University of Southern California	2,740	82.4	45	1.4	312	9.4	226	6.8	3,323	100.0
College of Medical Evangelists	36	90.0	2	5.0	2	5.0	0	—	40	100.0
University of Oregon	1,015	40.4	1,050	41.7	265	10.5	186	7.4	2,516	100.0
University of Washington, Seattle	311	66.5	25	5.3	47	10.0	85	18.2	468	100.0
All regions (active schools)	51,182	54.5	16,348	17.4	18,711	19.9	7,684	8.2	93,925	100.0
inactive U.S. dental schools	2,073	61.6	510	15.2	726	21.6	55	1.6	3,364	100.0
Canadian dental schools					433	97.1	13	2.9	446	100.0
Other foreign dental schools					131	95.6	6	4.4	137	100.0
Total (with schools designated)	53,255	54.4	16,858	17.2	20,001	20.5	7,758	7.9	97,872	100.0
Schools undesignated							38		3,419	
Total all schools									101,291	

8.2 per cent were in the federal dental services.

Graduates of schools in the Southwest and the Far West had the strongest tendency to locate in the state in which they graduated from dental school (76.7 per cent and 73.6 per cent, respectively). The high rate of population growth in this area has meant that its graduates have found most opportunity for prac-

tice locally. Only 8.0 per cent of the graduates of schools in the Southwest and 8.1 per cent in the Far West were located in other regions in 1957.

Eighty-six per cent of the graduates of the four California schools were located in California. Other dental schools with high percentages located in the same state were the University of Buffalo (85.3 per cent), University of Detroit (83.4 per cent), University of Texas (83.3 per cent) and New York University (80.6 per cent).

The 27 states having dentists who graduated from a dental school within the state are listed in Table 14, along with the percentage of dentists having graduated from schools of the state. The states having the highest percentages of dentists who graduated in the state were Nebraska (87.0 per cent), Missouri (86.9 per cent) and Pennsylvania (86.7 per cent).

For more than a century, the decennial population census has gathered data on complete occupational groups, including dentistry. The Bureau of the Census has decided that in 1960 it will obtain occupational data on every fifth person rather than every person enumerated. This procedure will provide an estimate rather than a count of dentists, and the reliability of the estimate will be relatively low in the states with small populations. This means that in the future, even more than in the past, the *American Dental Directory* will be the basic source of information on dental manpower.

Table 14 • Percentage of dentists graduating from school within state

State	Active school	Inactive school	Total
Alabama	22.4	3.5	25.9
California	67.3	—	67.3
Colorado	.0	33.5	33.5
District of Columbia	67.1	8.0	75.1
Georgia	79.0	.1	79.1
Illinois	78.7	.1	78.8
Indiana	70.2	.4	70.6
Iowa	77.0	.5	77.5
Kentucky	77.9	.0	77.9
Louisiana	56.5	13.8	70.3
Maryland	71.5	.0	71.5
Massachusetts	67.4	—	67.4
Michigan	73.7	1.6	75.3
Minnesota	82.7	.0	82.7
Missouri	85.7	1.2	86.9
Nebraska	85.2	1.8	87.0
New Jersey	.0	.8	.8
New York	54.2	5.5	59.7
North Carolina	8.0	.0	8.0
Ohio	66.6	9.2	75.8
Oregon	80.3	.0	80.3
Pennsylvania	86.7	—	86.7
Tennessee	68.9	11.3	80.2
Texas	69.0	.0	69.0
Virginia	58.7	.0	58.7
Washington	16.7	.0	16.7
Wisconsin	75.6	.0	75.6
United States	55.2	2.2	57.4

Survey of the dental laboratory industry. I. The dental laboratories responding

COUNCIL ON DENTAL TRADE AND LABORATORY RELATIONS
BUREAU OF ECONOMIC RESEARCH AND STATISTICS

The House of Delegates of the American Dental Association, at its 1957 annual session, adopted the following resolution: "Resolved, that, as soon as possible, the Association gather statistical information on the dental laboratory industry." Accordingly, a mail survey of dental laboratories was undertaken as a joint project of the Council on Dental Trade and Laboratory Relations and the Bureau of Economic Research and Statistics.

On August 25, 1958, the printed survey questionnaires were mailed to the 6,688 dental laboratories listed on the National Association of Dental Laboratories general mailing list. The questionnaire was developed by the Council and the Bureau with the assistance of a number of officers and members of the N.A.D.L.

Several methods were used to encourage dental laboratory owners to cooperate in the survey. Announcements relating to the survey were carried in the publications of the American Dental Association and the N.A.D.L. The N.A.D.L. also mailed promotional material to all dental laboratories on two occasions before the questionnaire was sent. Individuals associated with the dental laboratory industry stressed the importance of the survey in talks before groups of laboratory owners. When the questionnaire was mailed, it was accompanied by a post card which the laboratory owner could return, indicating that he had cooperated in the survey and requesting an advance copy of important results of the survey.

The Council on Dental Trade and Laboratory Relations has adopted the following resolution commending N.A.D.L. for the cooperation extended in the dental laboratory survey project:

Whereas, the House of Delegates of the American Dental Association has requested that statistical information on the dental laboratory industry be gathered, and
Whereas, the National Association of Dental Laboratories has assisted the agencies of the Association in the development of the dental laboratory industry survey questionnaire and in the conduct of the survey, therefore, be it
Resolved, that the Council on Dental Trade and Laboratory Relations acknowledge with appreciation the splendid cooperation of the National Association of Dental Laboratories in the 1958 survey of the dental laboratory industry.

Of the 6,688 dental laboratories in the country, 1,645, or 24.6 per cent, returned usable questionnaires. The response by region of the country is shown in Table 1. The response was above average from the western part of the country and below average from the northeastern regions. This geographic response pattern is similar to the pattern prevailing in surveys of dentists. The State of New York, with about 20 per cent of the nation's dental laboratories, did not have a dental laboratory association affiliated with the National Association of Dental

AMERICAN DENTAL ASSOCIATION, 222 East Superior St., Chicago 11

Survey of the Dental Laboratory Industry

CONFIDENTIAL

It will be easier for you to fill in the answers if you will first read through the entire questionnaire.

Information on persons working at your laboratory should include all workers; that is, owners, managers and employees.

Persons who do more than one type of work at your laboratory should be counted only in the job in which most of their time is spent.

For the purpose of this survey, the term "technicians" shall mean all persons who are engaged in production or bench work at your laboratory including both experienced and apprentice technicians.

Disregard code numbers in the right margin. Their purpose is to facilitate machine tabulation of answers.

1. In what year did you enter dental laboratory work? _____ (1-2)

2. In what year did you become a dental laboratory owner? _____ (3-4)

3. What is your type of business organization? (5-6)
   ☐ Sole proprietorship ☐ Partnership (*Number of partners* _____) ☐ Corporation

4. What type of laboratory do you operate? (7)
   ☐ General ☐ Processing ☐ Special (*specify*) _____

5. Please indicate the state and size of city in which your laboratory is located:
   State _____ (8-12)
   Size of city: ☐ Under 5,000 ☐ 25,000-100,000 ☐ 500,000-1,000,000 (13)
   ☐ 5,000-25,000 ☐ 100,000-500,000 ☐ Over 1,000,000

6. In what type of urban area is your laboratory located? (14)
   ☐ Downtown ☐ Suburb-business district
   ☐ Neighborhood business district ☐ Suburb-residential district
   ☐ Residential district

7. In what type of building is your laboratory located? (15)
   ☐ Medical-dental office building
   ☐ General office building
   ☐ Separate building for this dental laboratory only
   ☐ Dwelling house
   ☐ Other (*specify*) _____

8. Approximately how many square feet of floor space does your laboratory occupy? _____ square feet (16-17)

9. How many persons work at your laboratory? (*Include owners, managers and all employees.*) (18-19)
   _____ persons work full time _____ persons work part time (20-21)

10. Of all persons working full time at your laboratory, how many are in each of the following categories?

Category	*Number*	
Technicians	_____ persons	(22-23)
Management	_____ persons	(24)
Delivery	_____ persons	(25)
Clerical	_____ persons	(26)
Outside salesmen	_____ persons	(27)
Other (*specify*) _____	_____ persons	(28)
TOTAL	_____ persons	(29-30)

11. What is the number of men and women full-time technicians in your laboratory?
   _____ men technicians (31-32)
   _____ women technicians (33-34)
   TOTAL _____ technicians

12. How many full-time technicians are there in each age group in your laboratory?

Age	*Number*	
Under 20	_____	technicians (35-36)
20 to 29	_____	technicians (37-38)
30 to 39	_____	technicians (39-40)
40 to 49	_____	technicians (41-42)
50 to 59	_____	technicians (43-44)
60 and over	_____	technicians (45-46)
TOTAL	_____	technicians

13. How many of the full-time technicians in your laboratory have formal education as follows?

Amount of education	*Number*	
Grade school	_____	technicians (47-48)
High school, 1 to 3 years	_____	technicians (49-50)
High school graduate	_____	technicians (51-52)
College, 1 to 3 years	_____	technicians (53)
College graduate	_____	technicians (54)
TOTAL	_____	technicians

14. a. How many of the full-time technicians in your laboratory have taken organized courses of instruction in dental laboratory technics? (*If a technician has had more than one of the following three types of courses, count him only once—in the course of greatest length.*)

Type of course	*Number*	
One- or two-year course in general dental laboratory technics	_____	technicians (55-56)
One or more intensive courses, several weeks long, in special skill	_____	technicians (57-58)
One or more short courses (a few days) in special skill (*excluding courses of one day or less*)	_____	technicians (59-60)

b. How many of the full-time technicians in your laboratory have had only on-the-job training in dental laboratory technics (*at your laboratory or other laboratory*)? _____ technicians (61-62)

15. Of the full-time technicians in your laboratory, indicate how many have had laboratory experience as follows:

Years of laboratory experience	*Number*	
Over 20 years	_____	technicians (63-64)
Between 10 and 20 years	_____	technicians (65-66)
Between 5 and 10 years	_____	technicians (67-68)
Between 1 and 5 years	_____	technicians (69-70)
Under 1 year	_____	technicians (71-72)
TOTAL	_____	technicians

16. a. How many technicians have left your laboratory for employment elsewhere during the last year?

_____ technicians (1-2)

b. Of this number, how many went into work other than dental laboratory work?

Men, under 35	_____	technicians (3)
Men, 35 and over	_____	technicians (4)
Women, under 35	_____	technicians (5)
Women, 35 and over	_____	technicians (6)

c. What are the usual reasons given by technicians for leaving dental laboratory work? (7)

17. How many technicians have you employed during the last year, including both replacements and additions to staff? _____ technicians (8-12) (13-14)

18. What has been your experience in the employment of qualified technicians during the last year? (15)
- ☐ Have had much difficulty
- ☐ Have had some difficulty
- ☐ Have had no difficulty
- ☐ Have not attempted to employ qualified technicians

19. What has been your experience in the employment of apprentice or beginner technicians during the last year? (16)
- ☐ Have had much difficulty
- ☐ Have had some difficulty
- ☐ Have had no difficulty
- ☐ Have not attempted to employ apprentice technicians

20. Of your full-time technicians, how many are in each of the following categories? How many openings do you have? What is the weekly pay range?

Category	*No. now working*	*No. of openings*	*Approximate weekly salary: Starting*	*Maximum*	
General technicians			$	$	(17-23)
Full denture technicians			$	$	(24-30)
Partial denture technicians			$	$	(31-37)
Ceramist technicians			$	$	(38-44)
Crown and bridge technicians			$	$	(45-51)
Apprentice technicians			$	$	(52-58)
Other technicians			$	$	(59-65)

21. What fringe benefits does your laboratory provide for its full-time technicians? (*Exclude contributions for federal and state insurance programs, such as social security, workmen's compensation, etc.*) (66)
- ☐ Holidays with pay
- ☐ Vacations with pay
- ☐ Sick leave with pay
- ☐ Life insurance
- ☐ Pension plan
- ☐ Hospitalization insurance
- ☐ Surgical insurance
- ☐ Sickness or accident insurance
- ☐ Profit sharing
- ☐ Christmas or other bonus

22. What is the length of the regular work week in your laboratory? _____ hours (67-68)

23. To which, if any, of the following dental laboratory associations do you belong? (69)
- ☐ Local (*city or county*)
- ☐ State
- ☐ National Association of Dental Laboratories
- ☐ Other (*specify*) _____

24. a. What methods are used by your laboratory in attracting dentist patronage? (1-6)
- ☐ Direct mail advertising to dentists
- ☐ Display advertising in classified telephone directory
- ☐ Advertising in dental journals
- ☐ Telephone contact with dentists
- ☐ Personal visits with dentists
- ☐ Other (*specify*) _____

b. Do you customarily exhibit at the state or local dental society meeting? (7)
- ☐ State meeting
- ☐ Local meeting (8-12)

25. How many dentists have you served during the last year? _____ dentists (15-17)

26. a. Have you served dentists outside your own state during the last year? ☐ Yes ☐ No (18)
b. If yes, please indicate the percentage of the gross sales of your laboratory to:
Dentists in other states _____ per cent (19-20)
Dentists in other countries _____ per cent (21-22)

27. What were the total sales or billings of your laboratory in the following years? (23-25)
1957 $_____ 1956 $_____ 1955 $_____ (26-28)
(29-31)

28. How did your volume of business during the first half of 1958 compare with the same period in 1957? (32)
☐ Greater in 1958 ☐ Approximately the same ☐ Less in 1958

29. What was the total payroll of your laboratory in the following years? (33-35)
1957 $_____ 1956 $_____ 1955 $_____ (36-38)
(39-41)

30. In what months were your billings lowest and highest in 1957? (42)
Lowest month _____ Highest month _____ (43)

31. What is your customary billing period? (44)
☐ C.O.D. ☐ 90 days
☐ 30 days ☐ Other (*specify*) _____
☐ 60 days

32. Approximately what percentage of the cases brought into your laboratory is brought by each of the following methods?
Laboratory messenger _____ per cent (45-46)
Private parcel service _____ per cent (47-48)
Mail _____ per cent (49-50)
By the dentist _____ per cent (51-52)
Other (*specify*) _____ per cent (53-54)
TOTAL 100 per cent

33. Approximately what percentage of the following types of cases were you required to remake during the last year?
Full dentures (*all types*) _____ per cent (55-56)
Cast partial dentures _____ per cent (57-58)
Bridge work _____ per cent (59-60)
Porcelain and acrylic jackets _____ per cent (61-62)
Other (*specify*) _____ per cent (63-64)

34. What is the policy of your laboratory with regard to charging for "remakes"? (65-66)

35. You are invited to comment on any aspect of this survey or problems confronting dental laboratories. (67-68)

NO SIGNATURE REQUIRED

Table 1 • Distribution of all dental laboratories and of laboratories returning questionnaires, by region

Region	All laboratories		Laboratories returning questionnaires		Per cent returning questionnaires
	No.	Per cent	No.	Per cent	
New England (Conn., Maine, Mass., N.H., R.I., Vt.)	666	10.0	129	7.8	19.4
Middle East (Del., D.C., Md., N.J., N.Y., Pa., W.Va.)	2,379	35.5	409	24.9	17.2
Southeast (Ala., Ark., Fla., Ga., Ky., La., Miss., N.C., S.C., Tenn., Va.)	701	10.5	191	11.6	27.2
Southwest (Ariz., N. Mex., Okla., Texas)	245	3.7	89	5.4	36.3
Central (Ill., Ind., Iowa, Mich., Minn., Mo., Ohio, Wis.)	1,451	21.7	422	25.7	29.1
Northwest (Colo., Idaho, Kans., Mont., Neb., N. Dak., S. Dak., Utah, Wyo.)	275	4.1	94	5.7	34.2
Far West (Calif., Nev., Ore., Wash.)	971	14.5	311	18.9	32.0
Total	6,688	100.0	1,645	100.0	24.6

Laboratories at the time of the survey, and only 14 per cent of the questionnaires sent to New York were returned. In the Far West, Northwest and Southwest regions combined, the response was 33.1 per cent, almost double the response of 17.7 per cent from the New England and Middle East regions combined.

Fifty per cent of the dental laboratories which were members of the National Association of Dental Laboratories returned questionnaires, compared to only 14 per cent of nonmember laboratories. Of all dental laboratories responding, 71.2 per cent were members of the National Association of Dental Laboratories, 75.1 per cent were members of state laboratory associations, 36.1 per cent were members of local laboratory associations and 4.2 per cent indicated membership in other laboratory associations. Membership at all three levels—the national, state and local associations—was reported by 23.5 per cent, and membership in only the national and state associations by 39.4 per cent.

A considerably better response was received from large laboratories than from small laboratories. Although complete information is not available at this time the evidence available indicates that about 15 per cent of the one-man laboratories returned questionnaires, and that the percentage response increased with size of laboratory, reaching some 50 per cent for laboratories with 10 or more technicians. This response differential must be taken into account in any projections of the survey findings to national averages or totals for the 6,688 dental laboratories. Certain national projections will be presented in a later article in this series.

The distribution of dental laboratories by city size within region is shown in Table 2. The proportion of laboratories in large cities was greatest in the Middle East, Central and Far West regions. The Northwest region had the largest proportion of laboratories in cities of less than 25,000 population. Apparently some of the laboratories in the New England, Southeast and Southwest regions recorded "city size" on the basis of the entire metropolitan area in which they were located; there are no cities of over 1,000,000 population in these regions.

Among all dental laboratories responding, 60.0 per cent were located downtown, 30.0 per cent in neighborhood or suburban business districts and 10.0 per cent in residential districts (Table 3).

Table 2 • Percentage distribution of dental laboratories according to city size, by region

City size	New England	Middle East	South-east	South-west	Central	North-west	Far West	United States
Under 5,000	4.7	1.7	1.6	1.1	2.9	1.1	1.9	2.2
5,000–25,000	14.1	15.7	24.1	15.7	18.7	41.5	19.7	19.5
25,000–100,000	33.6	21.6	28.3	19.1	28.7	26.6	27.7	26.4
100,000–500,000	31.2	13.5	30.9	46.1	15.4	23.4	23.6	21.6
500,000–1,000,000	12.5	10.0	14.6	15.7	12.3	7.4	11.3	11.8
Over 1,000,000	3.9	37.5	.5	2.3	22.0	.0	15.8	18.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The percentage of laboratories located downtown varied from 84.0 per cent in the Northwest to 48.5 per cent in the Middle East. Neighborhood or suburban business district laboratories were most common in the Far West and the Middle East, and least common in the Northwest. The proportion of laboratories located in residential districts was more than twice as high in the Middle East as in the Northwest.

The percentage of dental laboratories located downtown was lower than the national average in both the largest and smallest city-size categories (Table 4). In the small cities, a plurality of laboratories was located in residential districts, whereas in the cities of over 1,000,000 population a plurality was located in neighborhood or suburban business districts.

Statistics on dental laboratories by type of building are presented in Tables 5, 6 and 7. About three-fourths of downtown dental laboratories were in general office buildings, compared to 45.3 per cent of laboratories in neighborhood and suburban business districts and 27.0 per cent of laboratories in residential districts (Table 5). Over-all, about 6 of every 10 laboratories were located in general office buildings, the remainder being divided quite evenly among medical-dental buildings, special buildings for dental laboratories, and residences. A few laboratories were located in garages, indus-

Table 3 • Percentage distribution of dental laboratories according to type of urban area, by region

Region	Type of urban area			Total
	Downtown	Neighborhood or suburban business district	Residential district	
New England	73.2	18.1	8.7	100.0
Middle East	48.5	36.3	15.2	100.0
Southeast	76.8	15.3	7.9	100.0
Southwest	55.1	33.7	11.2	100.0
Central	61.2	30.5	8.3	100.0
Northwest	84.0	9.6	6.4	100.0
Far West	51.8	40.0	8.2	100.0
United States	60.0	30.0	10.0	100.0

Table 4 • Percentage distribution of dental laboratories according to type of urban area, by city size

City size	Type of urban area			Total
	Downtown	Neighborhood or suburban business district	Residential district	
Under 5,000	36.1	25.0	38.9	100.0
5,000–25,000	67.9	18.1	14.0	100.0
25,000–100,000	68.0	23.4	8.6	100.0
100,000–500,000	62.4	28.5	9.1	100.0
500,000–1,000,000	57.9	34.7	7.4	100.0
Over 1,000,000	41.9	50.8	7.3	100.0
All city sizes	60.0	30.0	10.0	100.0

trial buildings and dental supply company buildings.

In the Far West, 28.7 per cent of the dental laboratories were located in medical-dental buildings, compared to only 7.4 per cent in the Middle East (Table 6). A dwelling house was reported as the location of 19.2 per cent of the laboratories in the Middle East, compared to an average of only 5 per cent in the Southeast, Northwest and Far West. The proportion of laboratories located in their own building was largest in the Southwest (21.4 per cent) and smallest in New England (7.0 per cent).

About one-fourth of the dental laboratories in cities of 500,000 to 1,000,000 population were in medical-dental buildings, compared to about one-tenth in cities of 5,000 to 100,000 population (Table 7). Only one-fourth of dental laboratories in towns of under 5,000 population were in general office buildings, compared to nearly 60 per cent in all other cities combined. Separate buildings for the dental laboratory were particularly common in the smallest cities, as were dental laboratories in dwelling houses.

The number of square feet of floor space used by dental laboratories is shown in Tables 8 and 9. The amount of floor

Table 5 • Percentage distribution of dental laboratories according to type of building, by type of urban area

Type of building	Type of urban area			All types of urban areas
	Downtown	Neighborhood or suburban business district	Residential district	
Medical-dental building	13.1	18.4	21.2	14.7
General office building	75.7	45.3	27.0	59.3
Separate building for dental laboratory only	7.0	20.1	20.6	11.9
Dwelling house	1.6	11.3	26.4	10.5
Apartment building	.9	1.4	1.1	1.1
Other	1.7	3.5	3.7	2.5
Total	100.0	100.0	100.0	100.0

Table 6 • Percentage distribution of dental laboratories according to type of building, by region

Type of building	New England	Middle East	South-east	South-west	Central	North-west	Far West	United States
Medical-dental building	13.3	7.4	14.7	15.7	11.4	17.0	28.7	14.7
General office building	68.8	59.0	60.7	48.3	65.5	67.0	47.1	59.3
Separate building for dental laboratory only	7.0	9.3	15.2	21.4	10.0	10.6	15.5	11.9
Dwelling house	8.6	19.2	4.2	12.4	10.0	4.3	5.8	10.5
Apartment building	2.3	2.2	.0	1.1	.5	.0	1.0	1.1
Other	.0	2.9	5.2	1.1	2.6	1.1	1.9	2.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

space varied widely (Table 8). Although 8.5 per cent of the laboratories had less than 200 square feet of floor space (the equivalent of a room 10 feet wide and 20 feet long), 7.5 per cent had more than 2,000 square feet and the maximum reported was about 70,000 square feet. This wide dispersion is reflected in the large difference between the mean (total square feet of all laboratories divided by number of laboratories) and the median (the middle laboratory in a ranking of all laboratories according to square feet). For all laboratories in the survey, the mean number of square feet was 861 and the median was 491. Because of the heavy influence of a single extraordinarily large laboratory on the mean square footage, the median is probably a better measure for "typifying" laboratories and making comparisons among regions, city sizes and so forth.

On the basis of the median number of square feet, the largest laboratories were in the Southwest (636 square feet), followed by the Southeast (553), Central (529), Middle East (508), Far West (442), New England (422) and the Northwest (395).

By city size, the largest laboratories were in cities of 100,000 to 500,000 population (609 square feet) and smallest in places of under 5,000 (281 square feet) (Table 8). By type of urban area, downtown laboratories were largest (527 square feet) and residential district laboratories smallest (299 square feet). Classified by type of building, labora-

Table 7 • Percentage distribution of dental laboratories according to type of building, by city size

Type of building	City size						All city sizes
	Under 5,000	5,000–25,000	25,000–100,000	100,000–500,000	500,000–1,000,000	Over 1,000,000	
Medical-dental building	13.9	10.0	10.6	16.3	24.4	17.9	14.7
General office building	27.8	63.2	62.0	57.5	53.9	60.1	59.3
Separate building for dental laboratory only	19.4	11.2	15.4	12.1	8.8	8.0	11.9
Dwelling house	36.1	14.0	9.2	7.9	8.8	9.6	10.5
Apartment building	.0	.0	.9	2.0	1.0	1.7	1.1
Other	2.8	1.6	1.9	4.2	3.1	2.7	2.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 8 • Percentage distribution of dental laboratories according to square feet of floor space, by region

Square feet of floor space	New England	Middle East	South-east	South-west	Central	North-west	Far West	United States
–100	1.7	1.6	1.7	3.5	.8	1.2	.4	1.2
100–199	8.4	9.3	5.8	3.5	6.7	3.6	8.3	7.3
200–299	21.0	14.8	13.9	9.3	11.5	19.3	16.3	14.5
300–399	16.0	12.8	9.3	11.6	11.5	14.5	16.6	13.1
400–499	13.5	10.7	14.0	14.0	17.5	12.1	19.9	15.1
500–599	9.2	10.1	9.9	3.5	7.2	7.2	7.3	8.2
600–699	5.9	6.8	9.9	12.8	7.0	10.9	6.3	7.7
700–799	3.4	6.3	5.2	5.8	3.8	7.2	4.3	4.9
800–899	1.7	3.3	2.3	4.6	5.2	2.4	4.7	3.9
900–999	2.5	3.6	2.3	1.2	3.8	2.4	2.3	2.9
1,000–1,499	8.4	7.9	14.0	18.6	10.7	7.2	6.0	9.6
1,500–1,999	.0	4.1	4.7	4.6	6.0	2.4	3.3	4.1
2,000–2,999	2.5	3.8	3.5	4.6	5.7	2.4	3.0	4.0
3,000–3,999	3.4	1.9	1.2	1.2	1.2	2.4	.3	1.4
4,000–4,999	.8	.5	.0	.0	.2	2.4	1.0	.6
5,000–	1.6	2.5	2.3	1.2	1.2	2.4	.0	1.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean	777	872	1,296	850	870	871	621	861
Median	422	508	553	636	529	395	442	491

tories in dwelling houses were smallest (317 square feet); the few laboratories in the "other" (miscellaneous) classification were largest (825 square feet). The median for special dental laboratory buildings was 800 square feet.

Of all dental laboratories responding, 72.4 per cent were sole proprietorships, 19.1 per cent were partnerships and 8.5 per cent were corporations (Table 10). Of these three types of business organization, corporations varied most in prevalence among the seven regions. Corporations were most common in New England (15.7 per cent of the laboratories) and were very rare in the Far West (1.9 per cent).

About 17 of every 20 dental laboratories (84.2 per cent) classified themselves as "general" laboratories, that is, they performed various types of dental laboratory work for dentists (Table 11).

Table 9 • Average square feet of floor space in dental laboratories, according to city size, type of urban area and type of building

	Mean	Median
City size		
Under 5,000	347	281
5,000–25,000	511	416
25,000–100,000	705	506
100,000–500,000	1,233	609
500,000–1,000,000	1,109	510
Over 1,000,000	926	499
Type of urban area		
Downtown	979	527
Neighborhood or suburban business district	767	497
Residential district	467	299
Type of building		
Medical-dental building	689	417
General office building	838	493
Separate building for dental laboratory only	1,284	800
Dwelling house	441	317
Apartment building	932	663
Other	1,719	825
All classes	861	491

Table 10 • Percentage distribution of dental laboratories according to type of business organization, by region

Type of business organization	New England	Middle East	South-east	South-west	Central	North-west	Far West	United States
Sole proprietorship	70.9	69.0	72.8	69.0	71.3	75.5	78.8	72.4
Partnerships	13.4	19.3	19.9	23.0	19.4	18.1	19.3	19.1
Two partners	11.8	15.7	16.2	18.4	14.7	13.9	13.8	14.9
Three partners	.0	2.9	2.1	1.1	2.6	2.1	2.6	2.3
More than three partners	0	.0	1.1	2.3	.5	.0	.3	.4
Number of partners undesignated	1.6	.7	.5	1.2	1.6	2.1	2.6	1.5
Corporation	15.7	11.7	7.3	8.0	9.3	6.4	1.9	8.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 11 • Percentage distribution of dental laboratories according to type of laboratory, by region

Type of laboratory	New England	Middle East	South-east	South-west	Central	North-west	Far West	United States
General	87.6	81.7	85.9	84.3	83.9	89.4	83.9	84.2
Processing	.8	2.4	3.6	3.4	2.6	2.1	1.9	2.4
Special	11.6	15.9	10.5	12.3	13.5	8.5	14.2	13.4
Denture	2.3	3.4	2.6	1.1	2.4	3.2	2.3	2.6
Crown and bridge	4.7	3.9	2.6	6.8	5.0	2.1	7.1	4.8
Ceramics and porcelain	.8	2.7	.5	.0	1.4	.0	1.9	1.5
Other special	3.8	5.9	4.8	4.4	4.7	3.2	2.9	4.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 12 • Percentage distribution of dental laboratories according to type of laboratory, by city size

Type of laboratory	City size						All city sizes
	Under 5,000	5,000–25,000	25,000–100,000	100,000–500,000	500,000–1,000,000	Over 1,000,000	
General	97.2	90.3	91.2	82.5	78.2	72.3	84.2
Processing	.0	2.8	2.1	3.4	2.6	1.6	2.4
Special	2.8	6.9	6.7	14.1	19.2	26.1	13.4
Denture	.0	2.2	.7	2.8	5.2	4.3	2.6
Crown and bridge	.0	1.9	2.5	5.4	5.2	10.6	4.8
Ceramics and porcelain	2.8	.3	.5	1.1	1.6	4.3	1.5
Other special	.0	2.5	3.0	4.8	7.2	6.9	4.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 13 • Distribution of dental laboratory owners by year entering dental laboratory work and by year becoming a laboratory owner

Year becoming a laboratory owner	Year entering laboratory work						Total	Per cent of owners
	–1919	1920–1929	1930–1939	1940–1949	1950–1958	No answer		
–1919	50					0	50	3.1
1920–1929	78	93				1	172	10.6
1930–1939	63	202	82			4	351	21.6
1940–1949	27	186	312	132		4	661	40.7
1950–1958	2	35	105	224	20	4	390	24.0
No answer	1	7	3	1	0	9	21	—
Total	221	523	502	357	20	22	1,645	100.0
Per cent of owners	13.6	32.2	30.9	22.0	1.3	—	100.0	

One in every eight laboratories (13.4 per cent) specialized in a particular type of work, including 4.8 per cent in crown and bridge work, 2.6 per cent in denture construction and 1.5 per cent in ceramics and porcelain work. The prevalence of "special" laboratories was greatest in the Middle East (15.9 per cent) and lowest in the Northwest (8.5 per cent). Nationally 2.4 per cent of the laboratories responding identified themselves as "processing" laboratories, that is, did work primarily for other laboratories.

The prevalence of "special" laboratories varied greatly by size of city, from 26.1 per cent of the laboratories in cities of over 1,000,000 population to 2.8 per cent in cities of under 5,000 (Table 12). Processing laboratories were most prevalent in medium-sized cities.

Of the dental laboratory owners returning questionnaires, nearly half (45.8 per cent) had entered dental laboratory work prior to 1930 (Table 13). Grouped in decades, the greatest number of laboratory owners entered laboratory work in the 1920's and the greatest number became laboratory owners in the 1940's. Of the 390 respondents who became laboratory owners in the 1950's, only 20 had entered laboratory work as late as the 1950's.

Table 14 • Percentage distribution of dental laboratory owners according to number of years elapsing between year entering dental laboratory work and year becoming an owner

Number of years	Per cent of owners	Cumulative per cent
0	4.0	4.0
1–2	5.9	9.9
3–4	10.6	20.5
5–6	12.2	32.7
7–8	12.0	44.7
9–10	11.9	56.6
11–12	10.9	67.5
13–14	6.8	74.3
15–16	7.3	81.6
17–18	4.9	86.5
19–20	4.7	91.2
21–22	3.1	94.3
23–24	1.8	96.1
25–26	1.4	97.5
27–28	.9	98.4
29–30	1.0	99.4
31–	.6	100.0

The percentage distribution of dental laboratory owners according to number of years between entry into dental laboratory work and becoming a laboratory owner is shown in Table 14. The mean number of years in dental laboratory work before becoming an owner was 10.4 years and the median was six years.

The next article in this series, scheduled to appear in July, will present survey findings relating to dental laboratory personnel.

The regulation of dental laboratories and technicians in Canada

Don W. Gullett, D.D.S., Toronto, Ontario, Canada*

COUNCIL ON DENTAL TRADE AND LABORATORY RELATIONS

As part of the continuing effort of the Council on Dental Trade and Laboratory Relations to provide information to the members of the Association on programs affecting the development and maintenance of effective relations between the dental profession and the dental laboratory group, the Council is pleased to present the paper entitled "The Regulation of Dental Laboratories and Technicians in Canada" which was read by Don W. Gullett, secretary, Canadian Dental Association, at the September 1958 "Symposium on Programs Affecting Relations Between the Dental Profession and the Dental Laboratory Group." THE JOURNAL readers may find Dr. Gullett's paper of special interest since the policy of the Canadian Dental Association on dental laboratory legislation is not in harmony with the policy position maintained for a number of years by the American Dental Association.

Elsewhere in this issue of THE JOURNAL, the Council and the Council on Legislation will present a report on the 1958-59 legislative activities of the so-called "public denturists" in Canada and the United States.

Initially it should be stated that the content of this presentation, at least in part, is not in harmony with the adopted policy of the American Dental Association. Furthermore, certain differences may exist in law and in interpretation of law when our two countries are compared. However, there is no question but that the American Dental Association and the Canadian Dental Association have the same end objective in endeavoring to establish amicable and satisfactory relationships between the dental professions and dental technicians. This presentation is not to be construed as an effort to persuade anyone but merely a report presenting our experience.

With minor amendments from time to time, the policy of the Canadian Dental Association on this particular subject has remained constant and is stated as follows:

The dental laboratory craft was developed under the initiation of the dental profession to assist in meeting the demand for dental health services. The dental laboratory technician serves in an adjunctive capacity to the dentist who is thus enabled to increase his service to the public. It is clear, therefore, that the best interests of the public are served by a strengthening of the adjunctive bond which exists between the dentist and the dental laboratory technician.

The Canadian Dental Association is of the opinion that the development of improved training programs would increase the efficiency of the dental laboratory technician and provide a better educational and economic base on which to build a better service to the dental profession for the public.

To meet these common objectives in the interests of the public, the Canadian Dental Association supports:

1. The establishment of formal training courses for dental laboratory technicians in vocational institutions, with members of the dental profession, including staff members of dental schools, cooperating in the instruction.

2. The efforts of dental laboratory technicians toward the procurement of legislation when such efforts do not jeopardize the right of the dental profession to render dental health care to the public.

3. Measures to improve the educational and economic base of the dental laboratory technician and of the dental laboratory craft.

In the interests of public health and welfare, the Canadian Dental Association will oppose:

All efforts of a legislative nature or otherwise designed to permit or allow the actual practice of dentistry directly for the public by other than fully trained and qualified members of the dental profession.

The Canadian Dental Association officially recognizes the valued contribution of dental laboratory technicians to the improvement of the service which the dental profession renders the public and will actively support all constructive objectives for the betterment of the vocation in line with this stated policy.

The pertinent point of difference in policy relates to the matter of registration and license, which we have supported. Before describing the actual legislation, it might be well to review the initial thinking in adopting such policy, and this goes back to 1942.

1. A tendency has existed in some respects to deal with auxiliary personnel as a group by a more or less set formula. In our opinion you cannot satisfactorily deal with men and women in the same manner. Through various experiences most of us have learned this fact of life. Owing to the nature of women and men, the vast majority of women will go along with legislative arrangements such as exist for dental hygienists but men will not, except for a short period or under coercion.

2. Technicians are men and like all men of action desire "a place in the sun." Such objective is creditable and should be recognized.

3. The view was taken that in the final analysis dental technicians would obtain some form of legislation and it was thought much better to work cooperatively toward legislative action approved by both the profession and the technicians than for the profession to enter into legislative battles.

I might add a personal observation: It's been my experience that no man advances very far by trying to keep his subordinates down. In reverse, by helping subordinates rise, you invariably help yourself. This same truism, in my opinion, applies to a profession.

These points may appear weak arguments today but, in our opinion, they are psychologically strong. Of course we did not have, in the early forties, the enlightenment of all that has occurred during the intervening years. However even with the intervening experience, the attitude has not altered.

An Act Respecting Dental Technicians was adopted by the Ontario Legislature in April, 1946. The presentation of this legislation was preceded by meetings of representatives of the dental profession and the technicians over a period of two or three years. The legislature of the Province of Quebec adopted legislation of a similar nature in 1944. The Quebec Act was probably one of the first acts adopted whereby technicians were granted the right to establish a technicians' board with registration and licensing powers. An attempt was made to improve on the Quebec legislation in drafting the Ontario legislation two years later and as a result minor, yet important, differences exist. For example, we faced the question of how to provide in the law for dental office employees. You can easily see that even your assistant, when she casts an inlay, may be doing something that the technician might think came in his field of operation. That difficulty arose under the Quebec legislation. We also were very careful in the Ontario law to protect the technician who was employed by a dentist; that is, exception was made that he did not necessarily need to be registered or qualified with the Technicians' Board.

Any specific references made herein will be to the Ontario legislation. These two provinces, Quebec and Ontario, represent 65 per cent of all the dentists in Canada and quite probably an even

higher percentage of the dental technicians. The other provinces were urged by the Canadian Dental Association to attempt the obtaining of this type of legislation in a similar manner. Unfortunately, from our point of view, action was delayed until the time came when minority groups of dental technicians in several provinces stirred up political activity in a demand to work directly for the public. As a consequence, repeated efforts in several provinces to obtain this type of legislation have failed so far, except in the Province of New Brunswick where an act with similar intent was adopted in 1957.

Referring to the Ontario Act in brief the following is provided for:

1. The establishment of a Governing Board of Dental Technicians consisting of five persons appointed by the legislature.

2. The Board is empowered to: (a) make regulations for admission and registration of dental technicians; (b) specify the qualifications for persons seeking admission; (c) maintain a register; (d) prescribe discipline and control; (e) provide for the payment of reasonable fees.

3. All regulations formulated by the Technicians' Board shall be submitted to the official body representing the dental profession before being submitted to the legislature for approval.

4. Persons registered under the Act are entitled to use the designation "Registered Dental Technician" and, in reverse, persons not registered are forbidden to use this designation or any similar title implying that he is a dental technician. The Act is clear-cut—if you are registered with the Board you carry on as a dental technician; if you are not registered, you don't carry on. There is no question, no intermediary thing about it, it's clear-cut.

5. Provision is stated whereby nothing in the Act shall be deemed to prohibit any person working as an employee of a legally qualified dentist.

6. Permission is given for a registered dental technician to carry on business as a dental technician in the name of a corporation but a registered dental technician must be in charge of its operations. We regard this as an important point.

7. Penalties are provided for any person, not registered under the Act, who carries on a business or holds himself out as carrying on the business of a dental technician.

The regulations under this Act state the qualifications for registration, amount of fees, direction respecting meetings of the Board, the election of officers with duties, discipline and ethics. Under the section on discipline and ethics, it is interesting to note that advertising in any form is prohibited except to members of the dental profession, materials used must be those prescribed by the dentist, and prohibition of direct or indirect advertising to dentists respecting consultations, free services, premiums, rebates or discounts. Specific procedure is provided for dealing with misconduct by a member. In both the Act and the Regulations it is stated that the business of a dental technician must be carried on in accordance with The Dentistry Act.

Particular note should be taken of the relationship between the dental profession and the dental technicians as established by this type of legislation.

1. While the legislation does not specify, by agreed understanding the dental profession has at least one representative as a member of the Technicians' Board.

2. All regulations or amendments are subject to review by the representatives of the dental profession before they can be effected.

3. No regulation or amendment of any kind can be made by the Technicians' Board which is not in harmony with the provisions of The Dentistry Act. That requirement may not seem strong enough to some people, but it has proved to be effective.

EFFECT AND EXPERIENCE

The fact that no serious difficulties between the dental profession and the dental technicians have arisen in the provinces where this legislation is in force speaks for itself. On the other hand, we have very serious unsolved problems in provinces where this legislation does not exist. In our opinion the very fact that the tools of administration exist in a stable form leads to mutual understanding and cooperation.

It would be foolish to expect perfection. Such a condition is not possible, at least as long as there are imperfect dentists and dental technicians. However, there has come into being a new and better understanding between the two groups under this legislation. The result is increased faith in each other, which is important. For example, the dental profession has supported adequate charges for laboratory services and cooperated in projects developed by the technicians. Our representatives assist, at the invitation of the Technicians' Board, in conducting their examinations. The head of the prosthetic department in the school actually assists and sits on their examining board. The technicians give a dinner each year for the graduating class and explain to that graduating class their position and what they are attempting to do. There are a lot of projects of that kind. This falls in the category of education and it all adds up to a good relationship between the technicians and the dentists.

The question of illegal practice is difficult to answer in a satisfactory manner. The amount of illegal practice in an area at any one time depends upon several factors, including the economic conditions. Of recent years the large immigration into Canada has been a factor. In this particular province to which I am referring, in one fairly small area, we have had 1,000,000 people from European countries come and settle. Among the million, there are a lot of would-be dentists—a number of whom were technicians at one time. Those are the people who have given us all of the trouble in respect to illegal practice. They are very

difficult to prosecute because they work for their own people only. The type of people who were engaged in illegal practice at the time the legislation was adopted have nearly all disappeared.

Under any arrangement, legal or voluntary, there probably will be some illegal practice. Our experience under this legislation is that the Technicians' Board has been just as anxious to curb illegal practice as the dental profession. If a Registered Dental Technician is found to be practicing illegally, he invariably loses his job and upon conviction, is struck from the technicians' register by the Technicians' Board. Through such cooperation, illegal practice is undoubtedly at a minimum in the Province of Ontario. This problem is certainly greatly reduced as compared both to the situation previous to the adoption of the legislation and the condition existing in provinces without the legislation. In conclusion it can be said that this type of legislation has brought harmony between dentists and technicians. Although problems continue to arise, they are settled amicably and, to the best of our knowledge, a state of general satisfaction obtains. Some proof of this statement lies in the fact that both the dental profession and the ethical technicians are energetically endeavoring to obtain similar enactment in other provinces.

Presented at the symposium on programs affecting relations between the dental profession and the dental laboratory group, sponsored by the Council on Dental Trade and Laboratory Relations, Chicago, September 29-30, 1958.

*Secretary, Canadian Dental Association.

1958-59 legislative activities of the so-called "public denturists"

COUNCIL ON DENTAL TRADE AND LABORATORY RELATIONS
COUNCIL ON LEGISLATION

During 1958 and thus far (March 15) in 1959, legislative bodies in the Provinces of British Columbia and Alberta, Canada and the States of Georgia, Nevada, Washington, Oklahoma and Illinois have been asked to adopt legislation enlarging the lawful functions of dental laboratory technicians. The legislative activities reported below have received, in each instance, the support of individuals identifying themselves as "public denturists." There is a possibility that similar legislative attempts will occur in other states and provinces during the remaining months of 1959.

BRITISH COLUMBIA

On February 25, 1958 the Minister of Health and Welfare for British Columbia caused to be introduced in the Legislative Assembly "An Act Respecting Dental Technicians" (Bill No. 45). Bill No. 45 called for the establishment of a five-member "board of examiners" for dental laboratory technicians authorized to function independently of the British Columbia dental examining board and empowered to: (a) make regulations for the registration and licensure of all dental laboratory technicians, (b) establish

the education, experience and technical qualifications required for registration, (c) examine persons applying for registration, (d) maintain a register of licensed dental technicians, (e) cancel or suspend the license and registration of any dental technician found by the board to be guilty of misconduct or of having displayed such incompetence as to render it desirable in the public interest that his registration and license should be cancelled or suspended, (f) establish suitable training or apprenticeship programs for dental laboratory technicians, and (g) identify the services encompassed within section 6 of Bill No. 45 which provided that "A dental technician duly registered and licensed under this Act may . . . make, produce, reproduce, construct, furnish, supply, alter or repair any prosthetic denture and for such purpose deal directly with the person for whom the denture is intended." Dentists, physicians, the employees of dentists and the apprentices or employees of a registered dental technician were to be exempted from the operation of the Act.

The College of Dental Surgeons of British Columbia, the Canadian Dental Association and the Dental Laboratory Association of British Columbia vigorously opposed the enactment of Bill No. 45. The objections of the profession and the ethical laboratory owners were directed principally to the following features of Bill No. 45: (a) the whole field of prosthetics—fixed, removable, partial and complete—was opened to unqualified personnel, (b) the "board of examiners" for the registered dental laboratory technicians could consist entirely of persons having no acquaintance with dentistry or the traditional role of the dental laboratory technician and (c) any technician regardless of the nature and length of his training or experience would be qualified to gain registered status. The opposition voiced by the profession and the ethical dental laboratory operators resulted in a referral of the bill to a special committee of the Legislative Assembly.

Three significant modifications of the Act were made before the measure was approved by the Legislative Assembly on March 19, 1958: (a) the language in section 6 which would have permitted the registered dental laboratory technician to deal directly with members of the public was deleted, (b) the dental laboratory technicians' board of examiners was authorized to issue regulations "providing for the prohibition of off-premise advertising and the limitation and control of on-premise advertising," and (c) the penalties for repeated violations of the Act were increased.

The dental laboratory technicians' board of examiners met for the first time in late-November, 1958. The chairman of the board is Dr. Gordon Schrum, dean of the department of physics at the University of British Columbia. The other members of the board are: Mr. R. R. Keith, a Vancouver lawyer; Dr. Harold M. Cline, past president of the British Columbia College of Dental Surgeons; Mr. Wilfred Elder, president of the Dental Laboratory Association of British Columbia; and Mr. Gerry Smith, president of the Dental Technicians Society of British Columbia (the "public denturists" group in British Columbia). The initial task of the board of examiners will be the development of regulations, subject to cabinet approval, establishing the standards of education, experience and technical qualifications for registered dental technicians in British Columbia.

ALBERTA

In January, 1958 a private bill was introduced in the Legislative Assembly of Alberta for the purpose of establishing and giving legal status to "The Alberta Public Denturists Society." The "denturist" bill stated, "the Society shall consist of the persons who, after the coming into force of this Act, are registered under this Act to practise as certified public

denturists in the Province of Alberta." The bill was designed to permit "certified public denturists" to repair or construct and fit "any complete upper or lower denture for the intended wearer thereof" provided, however, "No certified public denturist shall make, produce, construct, furnish, supply or fit any complete upper or lower denture directly for the intended wearer thereof unless the intended wearer first obtains and delivers to the public denturist a certificate of oral health from a duly qualified medical practitioner or dentist."

The bill would have entrusted the administration of the affairs of the "Society" to a "council of management" and would have empowered the "council" to (a) prescribe a program of training for student public denturists, (b) discipline the members of the Society, and (c) suspend or expel members of the Society for professional misconduct or incompetency or for failure to comply with a by-law of the Society.

The bill also called for the creation of a five-member "Board of Examiners for Public Denturists" separate and apart from the dental board established in the Alberta Dental Association Act. The denturist "Board of Examiners" was to: (a) evaluate the credentials of candidates for admission to practice, (b) exempt from examination a candidate who in the opinion of the "Board" qualifies by reason of his training and experience and possesses the qualifications required by the Act, (c) set examinations or tests for and conduct the examination of all persons who have not been granted exemption from examination by the "Board" and (d) certify successful candidates for admission to practice. A successful candidate before the "Board of Examiners" would have been entitled to a "certificate of approval for registration" which would have stated that the holder "is qualified to practise as a certified public denturist in the Province of Alberta."

In April, 1958 the Private Bills Committee of the Alberta legislature conducted public hearings for two and one-half days on the "denturist" bill. At the conclusion of the hearings, the bill was allowed to die in committee. The "denturist" bill was opposed by the Canadian Dental Association, Alberta Dental Association, the Faculty of Dentistry of the University of Alberta and the Alberta Dental Laboratory Association.

GEORGIA

On February 10, 1959 a "Georgia Denturistry Act" was introduced in the General Assembly of Georgia. The bill sought to establish a "Georgia State Board of Denturistry" and to license "denturists" to take impressions and to make or repair full dentures provided, however, that ". . . it shall be illegal for any denturist to practice denturistry upon any person unless such person shall possess a certificate of oral health from a duly licensed dentist or medical practitioner."

On February 12 the Committee on Hygiene and Sanitation of the Georgia legislature, composed of 23 members, unanimously disapproved the "denturist" bill. The "denturist" bill was opposed by the Georgia Dental Association and the Georgia State Dental Laboratories Association, Inc. The bill was supported by a group identifying itself as the "Association of Independent Dental Laboratories of Georgia."

NEVADA

Early in February, 1959 a bill calling for the licensing and regulation of "public denturists" was introduced in the Nevada legislature. The pending bill would establish a "Nevada state board of public denturists" and would authorize licensed "denturists" to repair, replace, reproduce, duplicate or supply broken or missing parts of prosthetic removable denture appliances directly for

the user or wearer. The Nevada bill prohibited "public denturists" from taking impressions ". . . of natural gum areas."

Public hearings on the Nevada "denturist" bill were held on March 2. The bill is being opposed vigorously by the Nevada State Dental Society and ethical Nevada dental laboratories.

WASHINGTON

On February 19, 1959 a "denturist" bill was introduced in the house of representatives of the Washington legislature. The bill would have permitted "licensed denturists" to ". . . make, alter and repair removable prosthetic denture appliances directly for the user or wearer, provided, however, that any impression of the mouth or jaws in connection therewith is taken by a licensed dentist." The Washington bill is especially noteworthy because of the provision requiring impressions to be taken by dentists and because the licensing of "denturists" would have been through the existing board of dental examiners rather than through a new and separate "denturist" board.

As a result of the vigorous and well-planned public relations and legislative action program of the Washington State Dental Association, the "public denturist" bill died in committee.

OKLAHOMA

On February 24, 1959 a bill was introduced which would establish a "State Board of Examiners for Dental Technicians" in Oklahoma. The Oklahoma bill would provide for the licensing of "apprentice dental technicians," "dental technicians," and "master dental technicians," and would permit "master technicians" to take impressions as well as perform all other dental prosthetic work ". . . for the general public as well as for dentists." Public hearings on the Oklahoma bill were held on March 18.

ILLINOIS

At the time this report was prepared (March 15) a "public denturist" bill had not been introduced in the Illinois General Assembly. The Illinois Medical Practice Act Commission, a legislative committee, has held three public hearings—in September and October, 1958 and in February, 1959—at which the Commission heard arguments for and against the proposition advocated by the Independent Dental Laboratories Association that "public denturists" should be licensed in Illinois to deal directly with the public. A "denturist" bill probably will be introduced before the adjournment of the 1959 Illinois General Assembly.

Note • The Councils expect to publish a final report on 1959 "public denturist" legislative activities shortly after the state legislatures have adjourned. This report probably will appear in the August or September issue of THE JOURNAL.

National Children's Dental Health Week in the Centennial year

BUREAU OF DENTAL HEALTH EDUCATION

Outdoor advertising posters—on 1,300 billboards in 37 states—were the newest means employed this year to call attention to National Children's Dental Health Week, February 8 to 14.

Television, radio and press also cooperated in explaining to the public the necessity for good dental care.

TELEVISION

A 20-second animated film—which tells youngsters that their "trouble-shootin' toothbrush" can help knock out old villain "tooth decay"—was shown on Romper Room programs in 70 cities, with an audience of more than four million mothers and children.

This spot announcement was one of a series of five produced by the American Dental Association. More than 200 sets of the films were sent to state and local dental societies, at their request, on a permanent loan basis. Either the society or the television station may keep the films; many stations have promised further showings of the spot announcements. The five subjects are: deciduous teeth; toothbrushing; early dental care; keeping one's teeth for a lifetime; sweets and tooth decay.

In many areas dentists were interviewed on local television shows—women's, news and disc jockey programs. Some dental societies presented television programs, using the scripts included in the program planning kits distributed by the Bureau of Dental Health Education. Others wrote their own scripts. (Radio stations broadcast similar programs.)

Copies of two slides based on the 1959 poster, plus brief written announcements, were sent to every television station in Minnesota.

The dental society in Memphis, Tenn., has started a file of films which remain at an educational television station throughout the year for showing at any time.

RADIO

Eighty sets of three 15-minute radio transcriptions were lent to state and local dental societies by the Bureau of Dental Health Education. Titles of the three shows are: "The Search" (anesthesia), "Pieces in a Puzzle" (fluoridation) and "Every Corner in Rome, Ma!" (toothbrushing). All are suitable for broadcast at any time; they may be borrowed in the future from the Film Library of the Association.

A grant of $5,000 from the toothbrush division of the American Brush Manufacturers Association was used to pay part of the cost of developing the outdoor advertising posters, the TV spot announcements and the radio transcriptions. This is the second year such a grant has been made for the production of material to be used for National Children's Dental Health Week.

In Washington, D. C., the principal speaker for the dental society's NCDHW meeting was Dr. Shane MacCarthy, executive director of the President's Council on Youth Fitness. The title of his speech was "Putting Teeth Into the Youth Fitness Theme." Invitations were sent to

Standing in front of one of the 35 outdoor advertising posters displayed in the St. Louis area during National Children's Dental Health Week are Philip Vierheller, president of the St. Louis Dental Society, and Delmar Searl, local manager of General Outdoor Advertising Co.

These six young people—district champions—matched smiles for the county championships in the seventh annual Smile of the Year contest sponsored by the Los Angeles County Dental Society. Nearly 200,000 junior high school students entered the contest.

The winners of Maryland's "Smile of the Century" contest, Larry Goodman and Linda Kirkpatrick, were crowned January 17 in Baltimore. Others in the picture are Douglas J. Sanders, president of the Maryland Society of Dentistry for Children; Jesse Trager, chairman of the public health committee of the Baltimore City Dental Society; Irving Abramson, Baltimore society president, and H. Berton McCauley, director of dental care in the Baltimore City Health Department.

all allied professions, public health and community groups, the district's parent-teacher association and the Federation of Citizens Associations. By arrangement with his staff, Dr. MacCarthy made a one-minute tape recording which was released at the beginning of dental health week through Radio Press, a Washington supplier of radio news for 60 or 70 stations in the Midwest, South, New England and New York.

Many short radio programs and spot announcements also were taped. Minnesota's state health department made recordings of four scripts, which were played on local radio stations.

NEWSPAPERS

More than 200 requests were received for a feature article, plus four pictures, prepared by the Bureau of Public Information. The article was made available to house organs, trade publications, newspapers and magazines through a feature service. The Bureau of Public Information also prepared some of the material included in the NCDHW program planning kit.

Articles on dental health were published in the food section of each newspaper in Memphis, Tenn. With one, which included recipes for sugar-free desserts, appeared a picture of the family of a local dentist. In Reno, Nev., a newspaper columnist devoted one day's column to a discussion of children's dental health. NCDHW got into the comics in Houston, Texas. Mr. Weatherby, who reports the weather daily on page one of a Houston newspaper, noted the beginning of the special week.

Baltimore was given extensive newspaper coverage of its dental health week activities. The *Baltimore Evening Sun* published a story and pictures of Maryland's Smile of the Century contest winners. The story featured hints on nutrition and teeth given by Eleanor McKnight of Baltimore's health department. The beauty editor of the *Baltimore News-Post* wrote an article, illustrated with photographs, pointing out the esthetic value of healthy teeth.

Articles on dental health also appeared in many school newspapers across the country. "The amount of newspaper coverage in Long Island and Queens, N. Y., all through the fall and winter, and right through Children's Dental Health Week, was the most that was ever given to dentistry," reported the NCDHW chairman.

CONTESTS

An excellent source of local publicity—television, radio, and newspaper—was the various contests held in connection with dental health week. There were smile contests, jingle contests, poster contests, limerick contests.

SCHOOL PROGRAMS

In an increasing number of cities, emphasis is on a year-round dental health program in the schools, with some special activities planned for the dental health week. The Bureau of Dental Health Education regards this as the goal toward which all dental societies' NCDHW programs should be aimed.

Dentists in Georgia are cooperating closely with the National Congress of Parents and Teachers in an attempt to initiate a program of continuous health supervision of children from birth through school, rather than a program of single appraisal at the time of school entrance.

In Nassau County, N. Y., the dental society distributed 1,000 toothbrushes to the children in a local grade school. Newspapers published photographs and "back to school" stories emphasizing the toothbrush distribution.

The Tenth District Dental Society of New York helped to build a dental health exhibit consisting of four 4 by 8 foot

Winners of the "Winning Smile Contest" held under the auspices of the council on dental health of the Philadelphia County Dental Society are shown at each side. They are Patricia Dinelli and Errol Melnick. With them are seen Dick Clark, second from left, popular television director, and Dr. Allen H. Wetter, Philadelphia school superintendent.

Winners in the Dallas County Dental Society's smile contest are shown with baseball player Mickey Mantle, the contest's honorary chairman. Two competitions were held, one for white children and one for Negro children. Entrants were limited to first graders in public, private and parochial schools—about 18,000 children. Missing front teeth did not disqualify a child, nor did deafness, blindness or mental retardation. Obvious cavities that had not been restored did disqualify a child. (Dallas News Staff photo by John Mazziotta)

The Francis J. Roddy family was given the 1959 dental fitness award by Bruno Floria (right), president of the District of Columbia Dental Society. The certificate cites the Roddys for "setting an example of good dental health habits for every American family." The ten children, eight of whom are in school, have no uncorrected dental faults and have followed the primary rules of regular brushing, careful diet and periodic checkups, the dental society found. (Washington Post and Times Herald photo)

A poster with the slogan "Healthy Teeth Are Happy Teeth" won the top award of a $25 savings bond in a contest conducted by the Peekskill, N. Y., Dental Society during National Children's Dental Health Week. The poster was drawn by a fifth grade boy. Discussing the winning entry are Charles Rosoff, a past president of the dental society, and the two judges, Mrs. Gene Moore and Mrs. Raymond Margles. (Peekskill (N.Y.) Evening Star photo)

Following custom, Times Square in New York was renamed Children's Dental Health Square for the observance of the 11th Annual Children's Dental Health Week. Miriam Mostysser, 9, is given an assist by Sanford N. Kingsly, Brooklyn, of the oral hygiene committee of Greater New York

panels with educational cut-outs. This was placed for a week in each of 13 public and two parochial schools. Each class was brought to the exhibit, which usually was placed in the school's lobby. Literature on dental health was given to each child to be taken home.

In many communities leaflets on dental health were given to school children. In others copies of *Dental Health Facts for Teachers* were presented to school teachers or books and pamphlets to the school library. Some schools were given films on dental health.

Dentists were much in demand as speakers at schools during the dental health week. In Kansas City letters were sent to all parent-teacher organization program chairmen and to school principals offering programs on dental health —an offer widely accepted.

South Carolina's committee on dental health and public relations sent letters stressing the importance of children's dental health to elementary grade schools, county superintendents of education, county health departments, practicing dentists and pediatricians. "Careers in Dentistry" was given to all guidance counselors in the state.

POSTERS

Department store windows in many cities featured material related to children's dental health. One of the outdoor advertising posters was placed in a store window in Grand Rapids, Mich. Banks, mu-

seums, drug stores, grocery stores, health departments and chambers of commerce displayed the 12½ by 16½ inch posters.

In several cities—among them New York City, Newburgh, N. Y., Philadelphia and Austin, Texas—riders on public transportation were reminded of National Children's Dental Health Week by car cards. Taxicabs in Newburgh, N. Y., and Dallas carried similar posters.

Miniatures of the 1959 poster were distributed on streetcars and buses and were mailed in statements by dentists. In Wilmington, Del., the dental society arranged for the telephone company to stuff all of one month's bills with a poster or a reminder of NCDHW. With the approval of the Austin Symphony Society and the school administration, the dental auxiliary of Austin, Texas, distributed 2,000 sets of four miniature elementary school posters plus a miniature NCDHW poster to youngsters, mothers and teachers attending the children's symphony concert January 27.

A miniature copy of the National Children's Dental Health Week poster, plus words of dental health advice were inserted with the February issue of *Jack's Tracks*, which is a monthly dental newssheet distributed to every grade in South Carolina's elementary schools.

For the Centennial year observance of National Children's Dental Health Week, 300,000 posters and 4,200 program planning kits were distributed to 1,514 individuals in 1,203 communities.

Posters published by the National Dairy Council and the National Apple Institute also were displayed throughout the nation. Local dairy councils cooperated closely with dental societies in many communities in obtaining publicity for the dental health week.

FLUORIDATION

Fluoridation was stressed by several dental societies as part of their activities for dental health week.

The council on dental health and a newly formed citizens committee started an all-out effort to obtain fluoridation for St. Louis County, Mo. Several thousand petition forms have been distributed to the offices of dentists and physicians and to National Congress of Parents and Teachers groups.

During dental health week, the Post Fluoridation Dental Survey, made in December in Orangeburg, S. C., by two dentists from the U. S. Public Health Service's regional office in Atlanta, Ga., was released. This is a follow-up study of the survey made in September 1952, when fluoridation was initiated in Orangeburg.

WOMEN'S AUXILIARIES

Women's auxiliaries are playing an increasingly important part in planning and carrying out programs for National Children's Dental Health Week. In Texas the women's auxiliaries were chiefly responsible for NCDHW activities. In Arkansas volunteers from the auxiliaries assisted local chairmen in many communities.

The women's auxiliary in Topeka, Kan., initiated a new program during dental health week. Members will assist the dental personnel at the City-County Health Department Dental Clinic at Stormont-Vail Hospital by taking over many of the office duties, thereby allowing more productive time to the professional personnel.

QUESTIONNAIRES

This year the Bureau of Dental Health Education sent questionnaires to more than a thousand of the state and local chairmen who received program planning kits. The purpose is to learn more about the type of material needed by local dental societies. The Bureau wishes to thank those who completed and returned the questionnaires; their com-

ments will be of great help in planning for future years.

NEW APPROACHES EMPHASIZED

No attempt has been made to give a comprehensive report on National Children's Dental Health Week activities throughout the nation. Because of space limitations, many excellent and effective programs could not be mentioned. New approaches are reported here in the hope that they might be of help to dental societies making their plans for 1960.

Supplement to List of Certified Dental Materials

COUNCIL ON DENTAL RESEARCH

ADDITION • Since publication of the most recent List of Certified Dental Materials, revised to April 1, 1958 (J.A.D.A. 56:752 May 1958), the following material which conforms to American Dental Association Specification No. 9 for Silicate Cements has been added.

CERTIFIED DENTAL SILICATE CEMENTS
(A.D.A. SPECIFICATION NO. 9, FIRST REVISION)

Cement	*Manufacturer or distributor*
Achatite	Vivadent Corporation

editorials

The Journal of the American Dental Association: rated first by both members and nonmembers

Borrowing a procedure which has long prevailed in the commercial world, THE JOURNAL presents another report to its ninety thousand stockholders—the members of the Association. Last month's report dealt with the constantly rising cost of production which has plagued the publication for the past decade. This month's report is much brighter. It concerns the quality of the product—THE JOURNAL—its position in the dental periodical field and its rating by readers. It is based on two recent readership surveys conducted independently of each other.

The first survey was made by the Publication Research Service of Chicago for the University of Chicago Press. Its purpose was to determine the attitude of the profession regarding the launching of a new journal devoted to clinical research. The validity of its findings are above question since the University of Chicago Press is interested in no organization having a dental publication. The second survey was made by the Bureau of Economic Research and Statistics of the Association as part of a more comprehensive survey of public opinion. Skeptics might question the validity of its findings because the survey was made for and by the publisher of one of the journals involved. Since, however, the Bureau's findings are essentially the same as those found by Publication Research Service, they, too, may be accepted as valid. Although the results of each study reflect wholly to the credit of THE JOURNAL, only the most significant data—for the sake of brevity—are presented here.

UNIVERSITY OF CHICAGO PRESS SURVEY

The opinions of dentists were obtained in two ways—by mail and by personal interview. Two categories of dentists were queried—teachers and practitioners. To save JOURNAL space and readers' time, this abridged report of dentists' preference is limited to the three mass circulation dental periodicals, although most other dental journals with national coverage were included in the study.

Teachers—733 Surveyed

	Journals read Regularly		Sometimes		Total	Journals found most helpful	
	No.	%	No.	%	%	No.	%
J.A.D.A.	600	82	126	17	99	171	23
Publication A	85	12	57	8	20	5	1
Publication B	74	10	49	7	17	4	1

Practitioners—816 Surveyed

	Journals read Regularly		Sometimes		Total	Journals found most helpful	
	No.	%	No.	%	%	No.	%
J.A.D.A.	594	73	192	24	92	343	42
Publication A	261	32	114	14	45	45	6
Publication B	215	26	78	10	36	31	4

BUREAU OF ECONOMIC RESEARCH AND STATISTICS SURVEY

The Bureau of Economic Research and Statistics of the Association conducted a comprehensive survey of dentists' opinions in November 1958. Five thousand two hundred and ninety-one returns were received from members and nonmembers of the Association—a return of 28.6 per cent. Here are the results:

	Publication A	Publication B	J.A.D.A.	No choice expressed*	Total
Which dental magazine do you like best for scientific articles? (Check one)	3.2	6.8	78.8	11.2	100.0
Which dental magazine do you like best for articles on practice management? (Check one)	24.3	29.7	17.5	28.5	100.0
Which dental magazine do you like best for news of dentistry? (Check one)	12.5	15.3	52.7	19.5	100.0
Do you read advertisements in one dental magazine more than in others? If so, which one?	11.4	7.0	15.8	65.8	100.0
Do you have more confidence in the advertisements in one dental magazine than in others? If so, which one?	.7	.5	36.2	62.6	100.0
If you file certain dental magazines, or clip articles for filing, which magazine do you think is most valuable for these purposes?	3.0	3.7	44.7	48.6	100.0

Cont.	Publication A	Publication B	J.A.D.A.	No choice expressed*	Total
Everything considered, which is your favorite dental magazine?	9.5	9.6	57.2	23.7	100.0
Which do you consider to be the most beneficial dental magazine?	4.1	5.6	66.0	24.3	100.0

*Includes respondents who checked more than one magazine and respondents who did not answer question.

The data compiled from these two surveys substantiate the findings of two previous studies made on the same subject,[1,2] both of which showed THE JOURNAL superior to other dental publications in reader interest, usefulness and reliability—both in editorial and advertising content. It is hoped that in publishing this important information, THE JOURNAL will not be accused of self-aggrandizement, because it is not presented for that purpose. It is published for the information of JOURNAL stockholders—the members of the Association—and for subscribers and advertisers whose loyal support—financial and otherwise—makes worthwhile the time, toil and planning that go into each issue.

1. American Dental Association pilot publication reader survey by Robert N. McMurry Co., 1947.
2. American Dental Association reader survey in cooperation with the Dentists Supply Co., 1952.

Dentifrices and advertising

Last July representatives of the American Dental Association, in a lengthy and documented presentation before a subcommittee of the Committee on Government Operations of the U. S. House of Representatives, exposed the false claims being made in some dentifrice advertising in this country.

"It seems obvious," the Association's testimony concluded, "that only the federal government has the resources effectively to control misleading and deceptive claims for nationally advertised products. It seems equally obvious that with respect to therapeutic claims for dentifrices, and, it might be observed, for a variety of proprietary nostrums, such control is either woefully inadequate or nonexistent."

Although the House Committee on Government Operations subsequently issued a report sharply critical of the false and misleading advertising claims for dentifrices, nothing has yet been done to curb such advertising. The Association's testimony was discussed not unfavorably in the advertising trade press, but no section of the advertising industry came forward to support dentistry's request for action to strengthen corrective procedures against misleading therapeutic claims for dentifrices and drug products.

Dentists in the United States are not the only ones who have to deal with the results of advertised suggestions that there are short cuts to dental health. The British Dental Association for several years has made efforts to stop the advertising by certain dentifrice manufacturers on the Independent Television Network (the private segment of the British television industry) of the same sort of misleading claims that are being made in the United States.

The British Dental Association has received substantial support outside the profession in its fight against misleading dentrifice advertising. Recently the Advertising Advisory Committee of the Independent Television Authority recommended the nonacceptance of dentrifice advertisements which, in the opinion of the British Dental Association, are misleading.

Commenting editorially on this welcome action, the *British Dental Journal* stated:[1]

> That such advertising propaganda has had its insidious effect is proved by statements made by the public, especially by children, many thousands of whom have genuinely believed that, so long as they used a certain toothpaste containing some magical agent, it was not necessary for them to clean their teeth regularly after meals, and that one brushing each day was sufficient to protect their teeth from dental decay. . . . There is no doubt that toothpaste advertisements induce many people to clean their teeth, to the advantage of the public dental health, but it should not be permissible for any advertisement in any medium to suggest that a cleaning agent has powers beyond those which in fact it possesses. The decision of the Advertising Advisory Committee may, therefore, provide a precedent which will have far-reaching beneficial effects both in newspapers and hoardings.

Subsequently the Independent Television Authority—the government-appointed agency to safeguard the public interest with respect to programs and advertising on commercial television stations—banned from English television stations the commercials for two dentifrices, Colgate and Gleem.

We join our sister publication, the *British Dental Journal*, in trusting that the benefits of the action will be far-reaching—so far-reaching in fact that they will be felt here in the United States where the promotion of a number of dental cleansers also is in dire need of cleansing.

1. Editorial. Toothpastes and television. Brit. D. J. 106:123 Feb. 17, 1959.

international correspondence

News from Great Britain

BRITISH DENTAL ASSOCIATION

In an editorial in the *British Dental Journal* of February 17th titled "Toothpastes and Television" the following appears:

"W. Stewart Ross reported to the Representative Board at the meeting held on January 31 that the Advertising Advisory Committee of the Independent Television Authority had decided to recommend to the Authority that programme contractors should be informed that advertisements for toothpastes which in the opinion of the British Dental Association made misleading claims should not in future be accepted.

"Even since the British Dental Association were first represented on this Committee, efforts have been made to stop the continual advertising on the Independent Television Network by certain dentifrice manufacturers of some misleading claims which were being made for their products, and this decision marks the satisfactory conclusion of these representations.

"It will be remembered that a resolution passed by the Representative Board in October 1955 read as follows:

'The British Dental Association recognize that a dentifrice is of considerable value in the cleaning of the teeth and gums, but do not accept as proved on the evidence at present available any claim that a dentifrice can actively prevent dental disease, otherwise than by virtue of its function as a cleansing agent.'

"It is recognised that in a world where forthright and original advertising pays, every legitimate device which will stimulate sales will be used, as witness the continual and original advertising of washing detergents. When this advertising has a direct bearing on the health and well-being of the nation, however, it is only right and proper that those responsible for such advertising, whether in the Press or on television, should take advice from those who are responsible for the health of the nation and who are dedicated servants of the public in their particular professional spheres. The British Dental Association have been conscious of the fact that, whilst misleading and unsubstantiated claims by certain dentifrice manufacturers have been made on television, not only has a false sense of security been fostered in the minds of the unenlightened public, but also the voice of the dental profession throughout the country has been neither heeded nor respected.

"There is no doubt that toothpaste advertisements induce many people to clean their teeth, to the advantage of the public dental health, but it should not be permissible for any advertisement in any medium to suggest that a cleaning agent has powers beyond those which in fact it possesses. The decision of the Advertising Advisory Committee may, therefore, provide a precedent which will have far-reaching beneficial effects both in newspapers and on hoardings."

NATIONAL HEALTH SERVICE

Last month I reported on The Report of the Ministry of Health for the Year 1957, and its references to dentistry. I wish to draw attention to references which dealt particularly with the Public Dental Officer (P.D.O.) in Great Britain, that small group of men and women trying to cope with the School Dental Service and who are doing splendid work under the most difficult conditions. The most striking feature in the Report for P.D.O.'s is the table on Page 176, Part II, which gives the age distribution of the 873 full-time P.D.O.'s in England and Wales alongside the number of births and the school population. This table

shows that only 51 men and 40 women under 30 years of age were in posts at the beginning of 1957, and the position today must be even worse than that and steadily diminishing month by month. The table shows that this depleted staff had 219 men and 49 women between fifty and sixty, and 126 men and 10 women over sixty.

This state of affairs is discussed in an article in the *British Dental Journal* of February 3rd by K.C.B. Webster as follows:

"During recent years, both Parliament and the Local Authority Associations have glossed over this inexorably developing situation, preferring to extol whole-time equivalence in statements about staffing. A transient security maintained by the employment of more and more part-time dentists, most of whom spend about six months in the School Service, is hardly in the interests of the dental health of the coming generation.

"Obvious questions which immediately arise from the present situation are: who is to fill the ranks of the chief and area dental officers of the future; who is to direct the ministrations of the coming ancillaries; who is to form the backbone of the school dental service, which was intended by the Teviot Committee to be the spearhead of the attack upon dental disease? The Report, Part II, estimates on page 186 that probably over one and a half million days of work were lost in 1957 through dental sickness, and the Report, Part I, page 218, states that there were 656,000 cases of emergency extractions for children up to 14 years of age by the General Dental Service.

"The Chief-Medical Officer, on page 16 of his introduction to Part II, writes that the inadequate recruitment to the local authority dental services 'is a serious matter because it is to the local authority services and their contribution to the dental care of expectant mothers and young children that the country look for the improved condition of teeth in the future. If these services fail, the task of maintaining dental health in the population may well be sisyphean, especially in the absence of auxiliary measures such as fluoridation which might provide coming generations with teeth adequately fortified against decay.' A parent who happens to live in, say, Nottinghamshire where school children are being officially warned that they cannot expect much more at their clinics than relief of pain, may well be of the opinion that the services have already failed."

In response to negotiations between the General Dental Service Committee for the British Dental Association and the Ministry of Health for improvements in conditions of practice the Ministry has proposed to release the following items from the requirement for prior approval:

1. Complete upper and lower dentures in vulcanite or acrylic resin after extractions for persons of 35 and over.
2. Apicectomy, provided that the practitioner submits preoperative and postoperative roentgenograms when payment is claimed.
3. Gold fillings.
4. Post-crowns with or without diaphragms.

THE CHILD AND US

This is the title of a presidential address given by W. G. Senior, Chief Dental Officer of the Ministry of Health to the Section of Odontology of the Royal Society of Medicine. This thoughtful and stimulating paper ends with the following paragraph:

"I trust it will be clear that by comparison with our forebears of 1891 we possess many more potential agencies for improving our service to children than they did. We must look ahead to ways and means of co-ordinating our efforts when those agencies are developed, as developed they surely must be. In a vision of the future one can see in each large centre of population a dental health officer who would co-ordinate dental health education measures in his area, who would organise preschool and school dental arrangements, who would advise dental surgeons in private practice and the hospital service on child dental welfare. Such a person would obviously need to be trained for the purpose as are our medical officers of health. Just as the need for a diploma in public health came to be recognized for medical officers of health so too would our dental health officer require to have a diploma in child dental health, which should be open to those in private practice who wished to specialise in paedodontics.

"If we honestly believe that dental disease is preventable, with the means at our disposal, and that our campaign should start with the young child, and if, moreover, we are not to be content to envisage future generations of full denture-wearing men and women, then it is for us not they or them to put our own house in order."

ITEMS OF INTEREST

The Charles Tomes Lecture will be delivered this year by the Rt. Hon. Lord Cohen of Birkenhead on Friday, May 22, in the Great Hall of the Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C.2. The title of the lecture will be "Facial Neuralgias" and all dental and medical practi-

tioners and dental students, are eligible to attend.

The American Dental Society of London have had a splendid program of meetings during this winter under the presidency of James Wright. Outstanding, perhaps, was the lecture by B. Cohen on "The use of Radioactive Isotopes in Dental Research" which accomplished the difficult task of making nuclear physics understandable and interesting to an audience which may have started by being skeptical but ended by being fascinated and enthusiastic.

Air Ministry Cadetship Scheme. To help overcome the particularly acute shortage of dental surgeons in the Royal Air Force, the Air Ministry now offers a limited number of dental cadetships affording university training leading to a degree in dental surgery, to suitably qualified young men who wish to serve on permanent commissions in the Dental Branch of the Royal Air Force. Under this scheme training is free, and during training candidates enjoy officer status and receive appropriate pay and allowances.

The many friends of Professor Robert Bradlaw will wish to congratulate him on the announcement of his appointment to succeed Professor Frank Wilkinson as Dean of the Post-Graduate Institute of Dental Surgery and Director of the Eastman Dental Hospital.

G. H. Leatherman,
D.M.D., F.D.S., R.C.S., F.A.C.D.

[Ed. Note: In the "News from Great Britain" in the April issue of THE JOURNAL, under the subheading "Items of Interest," the words "of Edinburgh" were inadvertently left out following "The Royal College of Surgeons . . ."]

news of dentistry

International dental research group awards honors, elects officers

A new president was installed and two dental scientists were honored at the 37th general meeting of the International Association for Dental Research held March 19-22 in San Francisco.

Hamilton B. G. Robinson, dean of the School of Dentistry, University of Kansas City, was installed as president. Dr. Robinson has been an outstanding figure in dental education and research throughout his career which includes many years as a teacher and research worker on the faculty of Ohio State University, Columbus, Ohio. He was editor of the association's publication, the *Journal of Dental Research*, for more than 15 years, retiring from this position last year.

Other officers elected include: vice-president, James A. English; president-elect, Holmes T. Knighton; secretary-treasurer, Dan Y. Burrill; publication committee, John B. MacDonald, and councilors-at-large, Genevieve Roth and Lucien A. Bavetta.

Ralph W. Phillips, a professor at the School of Dentistry, University of Indiana, Indianapolis, received the Wilmer Souder Award. This award is conferred annually on an individual who has made outstanding fundamental contributions to the development of dental filling and restorative materials.

Mr. Phillips, although not a dentist, is a Fellow of the American College of Dentists and of the International College of Dentists. He is a past chairman of the Dental Materials Group of the IADR, and is the only person ever to receive the annual Chicago Dental Society Research Award twice. He is chairman of the Department of Dental Materials of the Indiana University School of Dentistry.

The citation for the Souder Award reads:

1. To honor Dr. Wilmer Souder and his outstanding scientific accomplishments in the field of dental materials research.
2. To perpetuate the high scientific ideals which characterized his more than 30 years of service.
3. To encourage interest in dental materials research.
4. To confer the highest hopor in the field of dental materials research upon those scientists who, through research in this field, bring about outstanding advances in dental health.

The Hatton Novice Award, for the most meritorious presentation by a young

research initiate, was won by Richard L. Hoffman, College of Dentistry, University of Illinois, Chicago. Dr. Hoffman presented important findings from studies on transplanting teeth in experimental animals.

A citation of honorable mention was awarded to another young dental scientist, Benjamin F. Hammond, School of Dentistry, University of Pennsylvania, Philadelphia, for a report on bacterial nutrients in human saliva.

The association announced the selection of three of its members to receive travel grants to attend the International Congress on Physiology in Buenos Aires, Argentina, in August of this year. They are Bernard K. Forscher, University of Kansas City School of Dentistry; Leon Kraintz, University of Texas Dental Branch, Houston, and Frederick M. Liebman, New York University College of Dentistry.

These travel awards of $750 each were made possible through a grant from the National Institute of Dental Research as part of a program to promote wider exchange of knowledge in areas of basic science relating to dentistry.

Seven hundred dental scientists attended the four day meeting. The next meeting of the IADR will be held in Chicago in March 1960, at a place to be announced later.

Gunnar Ryge, right, chairman of the Dental Materials Group, IADR, presents the Souder Award to Professor Ralph W. Phillips, School of Dentistry, University of Indiana, Indianapolis, for outstanding contributions to the development of dental filling and restorative materials.

Ned B. Williams, left, presents Benjamin F. Hammond, School of Dentistry, University of Pennsylvania, with a citation of honorable mention at the annual meeting of the International Association of Dental Research in March.

Richard L. Hoffman, left, receives the Hatton Novice Award at the IADR meeting in San Francisco from Dr. Williams, retiring president of the association. Dr. Hoffman is with the College of Dentistry, University of Illinois, Chicago.

Groundbreaking ceremonies for the $3,700,000 Dental Research Laboratories at the National Institutes of Health, Bethesda, Md., took place April 13. Participating were (l. to r.): Francis A. Arnold, Jr., director of the National Institute of Dental Research; C. Willard Camalier, Association assistant secretary and director of the Washington office; John W. Knutson, chief dental officer, Public Health Service, and Seymour Kreshover, associate director of the National Institute of Dental Research. Plans for laying of the cornerstone are scheduled for early fall of this year.

DATES SET FOR GORDON RESEARCH CONFERENCES

The Gordon Research Conferences for 1959 will be held from June 15 to September 4 at Colby Junior College, New London, N. H., and Kimball Union Academy, Meriden, N. H.

The conferences were established to stimulate research in universities, research foundations and industrial laboratories. This purpose is achieved by an informal type of meeting consisting of scheduled lectures and discussion groups. Sufficient time is available to stimulate informal discussions among the members of a conference. Meetings are held in the morning and in the evening, Monday through Friday, with the exception of Friday evening.

Additional information and application forms can be had by writing to: W. George Parks, Director, Department of Chemistry, University of Rhode Island, Kingston, R. I.

Association Affairs

ASSOCIATION LAUNCHES 1959 SURVEY OF DENTAL PRACTICE

In mid-May, some 35,000 dentists throughout the country will receive an important dental practice questionnaire from the Association. Surveys of dental practice have been conducted by the Bureau of Economic Research and Statistics every three years, providing a wealth of information helpful to both the

practicing dentist and dental organizations.

The 1959 Survey of Dental Practice, in addition to gathering information on income, expenses and auxiliary personnel, has a special purpose: to obtain a true picture of the amount and type of dental services being rendered across the country and the age and sex of patients receiving these services. This information is needed by the health insurance industry before dental insurance, similar to hospitalization and medical insurance, can be developed.

Dentists receiving questionnaires are earnestly requested by the Bureau to complete and return them, thereby doing themselves and their profession a service. Those participating can request an advance summary of the results of the survey by returning a postcard that will be enclosed with the questionnaire.

HOUSING BUREAU PREPARES FOR BIGGEST ANNUAL SESSION

The Centennial Session of the Association promises to be the biggest and most interesting dental convention that has ever been held.

The Housing Bureau is busy filling applications for hotel rooms in New York as fast as they come in. There are still many fine accommodations to be had during the dates of the session, September 14-18. As the time draws closer, the Bureau emphasizes that it is more important than ever to indicate alternate hotel choices on the application blank which is on page 216 of this issue of THE JOURNAL.

Hotels which still have rooms are: Barclay, 111 E. 48th St.; Belmont Plaza, Lexington Ave. & 49th St.; Biltmore, Madison Ave. & 43rd St.; Commodore, Lexington Ave. & 42nd St.; Gotham, Fifth Ave. & 55th St.; Governor Clinton, Seventh Ave. & 31st St.; Lexington, Lexington Ave. & 48th St.; Martinique, 49 W. 32nd St.; New Yorker, Eighth Ave. & 34th St.; Paramount, 235 W. 46th St.; Savoy Hilton, Fifth Ave. & 58th St.; Sheraton-McAlpin, Broadway & 34th St.; Statler Hilton, Seventh Ave. & 33rd St.; Victoria, Seventh Ave. & 51st St.; Warwick, 65 W. 54th St., and Wellington, Seventh Ave. & 55th St.

EXPANDED GROUP INSURANCE PROGRAMS ATTRACT MEMBERS

The Association's Council on Insurance has been advised by M. A. Gesner, Inc., that the membership is rapidly taking advantage of the increase in monthly benefits available under the Group Accident and Health Insurance Program which became effective January 1, 1959.

As a result of announcements mailed by the Gesner company March 17 and 18, applications for coverage under the program had been received from 358 previously uninsured members as of April 10, and 1,473 applications for increased benefits had been received from members already insured.

The previous peak monthly indemnity available under the Association's plan was $400. This has been increased to permit eligible insurable members to purchase insurance providing $500 or $600 per month in benefits. Members currently limited to $200 per month because of classification as impaired risks are not eligible for the increased benefits.

The Great-West Life Assurance Company has reported that approximately 75 per cent of the members participating in the Group Life Insurance Program applied for the increase in basic benefits under that program from $10,000 to $20,000. In addition, new enrollments for the first calendar quarter numbered 1,143, bringing the total number of Association members participating in the plan to 21,400. Previously insured members who chose to reject the increase in benefits can still obtain the higher benefits by submitting applications demonstrating proof of insurability.

Percy T. Phillips, president of the American Dental Association, is shown receiving the Thomas P. Hinman medallion for his outstanding work in dentistry. The presentation was made by Thad Morrison, Jr., right, chairman of the Hinman Clinic which was held in Atlanta in March. The clinic was attended by more than 2,000 dentists and technicians.

Applications for both of the Association-sponsored group insurance programs can be obtained from Mr. Herbert C. Lassiter, secretary of the Council on Insurance.

10TH NATIONAL DENTAL HEALTH CONFERENCE

"Dental Care Problems in the Next Century" was the theme of the tenth National Dental Health Conference held April 27-29 at the Association's Central Office. The conference was sponsored by the Council on Dental Health, under the chairmanship of Jay H. Eshleman.

Talks on dental health education programs in schools were given by Delbert Oberteuffer and Leonard J. Dolton, and Charles A. Metzner spoke on "Attractions and blocks—the A and B of the utilization of dental service."

Clinical dental programs in state and county institutions were discussed by Charles M. Belting and Edward R. White. Robert K. Stinaff and George W. Glann covered the subject of effective utilization of dental auxiliary personnel, and the issues involved in the group purchase of dental care as a part of the employer-employee relationship were discussed by Mr. John Abel, G. T. Chuljian and Mr. J. F. Follmann, Jr.

On the second day of the conference workshop sessions were held, and on the final day group reports were given and discussed, with William P. Brust presiding.

NEW FILM ON USE OF DENTAL X-RAY EQUIPMENT AVAILABLE

A new motion picture, "Dental X-ray Equipment: Alteration for Modern Radiation Hygiene," has been released, according to a joint announcement from the Association and the National Bureau of Standards. The film is the ninth in a series of motion pictures on dental materials produced by the Council on Dental Research of the Association in cooperation with the Bureau.

The 16 mm. sound and color film, 18 minutes in length, is for viewing by personnel of the health professions. Its primary purpose is to show the dentist how good diagnostic x-ray pictures may be produced with a minimum amount of radiation to the patient.

Arrangements for loan may be made by writing to the American Dental Association Film Library, 222 East Superior Street, Chicago 11, or the Office of Technical Information, National Bureau of Standards, Washington 25, D. C.

APPOINTMENT BOOK REVERTS TO FORMER POPULAR FORMAT

In response to an overwhelming demand from members of the Association, the 1960 American Dental Association appointment book will revert to its 1957 format. The new books are now available from the Order Department at the Central Office.

Eliminated from the 1960 book are lines for quarter-hour appointments which did not prove acceptable to a majority of dentists.

The appointment book is case bound in simulated leather and the price is $3, postpaid to any destination in the United States.

GILBERT P. SMITH TO JUDGE AT NATIONAL SCIENCE FAIR

Gilbert P. Smith, associate dean of the School of Dental and Oral Surgery, Columbia University, will replace Raymond J. Nagle as judge of the exhibits at the National Science Fair in Hartford, Conn., May 6.

The American Medical Association has invited representatives of the American Dental Association and the American Veterinary Medical Association to be its guests at the Science Fair Awards Banquet Thursday, May 7. At the banquet representatives of the three health professions will present awards for the winning exhibits selected by judging committees from each group.

Association president-elect Paul H. Jeserich will present the awards for the Association and will explain briefly the role of science in dentistry to the expected audience of 1,000 students, teachers and sponsors.

ANNUAL INDEX TO DENTAL LITERATURE FOR 1958 READY

The Annual Index to Dental Literature for 1958 is now available, it was announced by Donald A. Washburn, director of the Association's Bureau of Library and Indexing Service.

The volume lists 7,580 articles in English from 921 issues of dental periodicals. Including the major entries there are 15,759 entries by subject and authors. There are 206 book reviews, 1,554 obituaries and 270 editorials.

The *Annual Index*, priced at $10, may be ordered from the Order Department, Central Office.

MORREY, ASSOCIATION EDITOR, RECEIVES HONORARY DEGREE

On April 22, the University of Indiana, Indianapolis, conferred an honorary Doctor of Laws degree on Lon W. Morrey, editor-in-chief of the American Dental Association.

A former member of the faculty of Loyola University School of Dentistry, Chicago, from which school Dr. Morrey was graduated, he has been dental director for the State of Illinois and director of the Division of Dental Hygiene of the Chicago Board of Health. Prior to becoming editor of the Association in 1947, Dr. Morrey directed the Bureau of Public Relations of the Association for 14 years. During his long career he has lectured and contributed many articles on public health dentistry and preventive dentistry for children.

Dr. Morrey was presented the C. N. Johnson memorial award in 1958 by Loyola University in recognition of his interest in dental journalism. In 1959 he was given the Odontographic Society of Chicago award.

'ATLAS OF THE MOUTH' CHOSEN FOR TOP HONORS IN EXHIBIT

The recently issued second edition of "Atlas of the Mouth," prepared by Maury Massler and Isaac Schour and published by the Association, has been selected as a top honor book in the 10th Annual Exhibit of Chicago and Midwestern Bookmaking. The announcement was made by the executive committee of the Chicago Book Clinic.

Three traveling exhibits of the winning books will be displayed by major midwestern libraries during the remainder of the year.

Legislation

ASKS STRENGTHENING OF ARMY, AIR FORCE DENTAL PROGRAMS

Two bills to improve the administration and organization of the Army and Air Force dental corps have been introduced by Representative Rivers (D., S. C.), fourth ranking member of the House Armed Services Committee.

In a strongly worded statement to the House of Representatives, Congressman Rivers criticized the management of the dental care programs in the two services and urged enactment of the two bills "so that the Army and the Air Force dental services will be able to match the achievements made by the Navy Dental Corps in developing an outstanding career service."

'DENTURIST' LEGISLATION DEFEATED IN ANOTHER STATE

A denturist bill has been defeated in the state legislature of Nevada, in addition to the defeat of similar bills in Georgia and Washington as reported last month in THE JOURNAL. The expected threat of the introduction of such a bill in Idaho did not materialize.

The bill in Oklahoma has been amended to prohibit the so-called "master technicians" from taking impressions and has been reported without recommendation by a legislative committee. In Illinois, the expected bill has not been introduced as yet.

CONGRESS HEARS TESTIMONY ON DENTAL RESEARCH BOOST

Urging an increase of $2,000,000 in funds for next year's dental research program administered by the National Institute of Dental Research, Floyd W. Pillars, Des Moines, Iowa, vice-chairman of the Association's Council on Legislation, testified April 15 before the House Appropriations Subcommittee on Labor, Health, Education and Welfare.

In accordance with a resolution adopted by the Association's Council on Dental Research, Dr. Pillars outlined to the subcommittee the need for expanding the number of essential dental research projects in the country's dental schools and recommended that funds to provide grants to the schools for this purpose be increased by $1,000,000.

Dr. Pillars also cited the acute need for well-trained dental teachers and research workers and on this basis recommended increases in funds for training and fellowship grants of $500,000 and $300,000 respectively. Finally, it was recommended that $200,000 in additional funds be provided to permit the NIDR to conduct certain essential research projects at its own facilities.

The Association representative emphasized that the recommended increases of $2,000,000 would assure a "sound and reasonable rate of progress for the dental research program" and he pointed out that "as a result of the excellent work that is being done now, future generations of Americans will reap the benefits of less dental disease and improved dental care."

The Council on Legislation urges dentists to write their Congressmen urging them to support the Association's recommendation for the increase in appropriations from $7,420,000 to $9,420,000. Copies of the letters should be sent to Representative John E. Fogarty, chairman of the appropriations subcommittee.

Subscripts • The Administration has endorsed a proposal which would require employers of one or more employees to pay unemployment insurance taxes on their employees. Present federal law covers employers of four or more employees. Hearings on the bill are being held by the House Ways and Means Committee. . . . Representative Morrison (D., La.)

has introduced a bill providing for the payment by the government for the cost of health care, including dental care, for civilian employees in government service overseas and their dependents.

Dental Societies

DANIEL F. LYNCH CHOSEN FONES AWARD WINNER

Daniel F. Lynch, of Washington, D. C., past president of the American Dental Association, has been selected for the 1959 Fones Award by the Connecticut State Dental Association.

The citation, which reads "For Achievement in the Art and Science of Dentistry," will be awarded at the annual meeting of the society May 13, 14 in Hartford.

Two men also have been singled out by the Connecticut Society for the Hayden Award this year. They are Mr. Arthur Leland Glidden, president of the New Canaan Water Company, and Mr. Carlton Hill, editor of the *New Canaan Advertiser*. They will be cited for their successful efforts to have New Canaan's water fluoridated.

STATE SOCIETIES URGED TO FORM JOINT COUNCILS

To help states, communities and national organizations plan their programs and activities for 1959 and 1960, the Joint Council to Improve the Health Care of Aged will sponsor its first national conference for representatives of state affiliates June 12-14 in Washington, D. C.

State dental societies last month were invited to participate as affiliates of the American Dental Association, one of the member groups of the Joint Council.

The announced purposes of the conference will be to encourage and assist affiliates in establishing state joint councils; to develop patterns for joint effort and planning, and to help delineate the role of affiliates in preliminary state conferences and the White House Conference on Aging which is scheduled for the week of January 9, 1961.

TWO RHODE ISLAND GIRLS WIN AWARDS IN SCIENCE FAIR

Two Rhode Island girls each have been awarded a $50 U. S. Savings Bond by the Rhode Island State Dental Society. They presented winning exhibits at the Science Fair sponsored by a Providence newspaper and held at Brown University.

Joan Taaffe and Sandra F. Woods, both of Warwick, were the recipients of the awards. Joan's project was "Makeup and the Kinds" and Sandra's was "Fight Against Tooth Decay."

SECOND DISTRICT SOCIETY OF NEW YORK HONORS PHILLIPS

A commemorative plaque was given to Percy T. Phillips, Association president, by the Second District Dental Society, a component of the Dental Society of the State of New York.

The presentation was made by Andrew F. Catania, president of the Society, at its centennial inauguration meeting in February.

The climax of the society's local celebration will occur when a dinner dance is held at The Towers Hotel in Brooklyn May 2 at which five members whose number of years in practice in Brooklyn is greatest and whose contribution to organized dentistry is most noteworthy will be honored.

During the Centennial Session attending members of the Association are invited to visit the Second District Dental Society's commodious headquarters at 111 Ft. Greene Place, Brooklyn. The Second District Society erected its own building dedicated solely to the advancement of the dental sciences.

Joseph V. Masino (left), president of the Philadelphia County Dental Society, presents set of dental instruments to Sister Mary Simon of Medical Mission Sisters, as Vincent T. Buggy, a member of the board of governors of the society, looks on. Equipment donated by the society members will be used to set up a clinic at Rawalpindi, Pakistan, under supervision of Sister Simon, first member of the Mission to become a dentist.

WERNHER VON BRAUN TO SPEAK AT MISSISSIPPI CONVENTION

Wernher Von Braun, internationally known ballistics missile expert and rocket engineer, will be one of the principal speakers at the annual meeting of the Mississippi Dental Association. The session will be held June 20-24 in Biloxi.

Distinguished guests from all of the healing arts sciences will be present to honor dentistry. Among the guests will be Frank J. Houghton, dean, Loyola University School of Dentistry, New Orleans, James T. Ginn, dean, University of Tennessee School of Dentistry, Maynard K. Hine, dean, University of Indiana School of Dentistry, and Hamilton B. G. Robinson, dean, University of Kansas City School of Dentistry.

Percy T. Phillips, president of the American Dental Association, will address the session on Monday, June 22. Mississippi Governor J. P. Coleman will preside at the Centennial Luncheon June 23 at which Dr. Von Braun will speak.

COUNTY SOCIETY HELPS EQUIP MISSION CLINIC IN PAKISTAN

Sister Mary Simon sailed in February for Pakistan fully equipped to handle the dental problems of a Roman Catholic mission at Rawalpindi, thanks to the Philadelphia County Dental Society.

The nun is a member of the Medical Mission Sisters, whose motherhouse is in Fox Chase, Philadelphia. She is the mission's first trained dentist, and is a graduate of the Georgetown University Dental School.

Sister Simon had written a letter to the society citing the needs of her mission. She said all kinds of equipment were needed to provide care for the neglected teeth of the natives. She asked that the word be spread that any old or excess supplies would help. The society sent a letter to its members and dental journals carried the appeal. Supplies soon began to come in and now Sister Simon has two dental chairs, a couple of drills including a modern water-jet one, drugs, cotton and everything else needed to set up a clinic.

International

DENTAL SURGEONS IN ENGLAND TO MARK CHARTER CENTENARY

The year 1959 marks the Centenary of the granting of the Royal Charter by

A highlight of the annual meeting of the Philadelphia County Dental Society held in March was the presentation of a Distinguished Service Award to Charles Patton, Association Trustee for the Third District, left, for his outstanding contributions to the dental profession. Presenting the award are (l. to r.) Joseph V. Masino, president of the Philadelphia County Dental Society, Robert W. Gick, Jr., chairman of the annual meeting and president-elect of the society, and Percy T. Phillips, president of the American Dental Association, who also received an award.

which the Diploma of Licence in Dental Surgery was established in England.

Arrangements for celebrating the event are in the hands of a Centenary Committee of the Board of Faculty of Dental Surgery of the Royal College of Surgeons under the chairmanship of G. H. Leatherman.

The program will be held July 22-24 at the Royal College of Surgeons in London except for a reception to be given by the University of London at the Senate House on the final evening. On Thursday, July 23, the Menzies Campbell Lecture will be given by Professor Robert Bradlaw, C.B.E., F.R.C.S., F.D.S.R.C.S.

An historical exhibition will be on view throughout the program.

REGIONAL COMMISSION OF F.D.I. TO MEET IN HAMBURG IN JUNE

The social and political implications of the Organization for European Economic Cooperation will be discussed by Erich Muller, chairman of the meeting of the European Commission of the Fédération Dentaire Internationale to be held June 12-14 in Hamburg, Germany.

Also on the agenda are a discussion of the problems of socialized health insurance in several European countries, and a tour to Helgoland sponsored by the German Dental Association.

BRITISH BAN T.V. COMMERCIALS FOR TWO DENTIFRICES

Television commercials for two dentifrices—Colgate and Gleem—have been banned from stations in England as the result of protests by the British Dental Association. (See discussion in "News from Great Britain" and editorial.)

The action was taken by the Independent Television Authority, government-appointed agency to safeguard the public interest with respect to programs and advertising on commercial television stations.

The objections—"in the interest of standards in advertising and in the interests of the dental health of the British public in general"—were directed at the themes concerning the ingredients Gardol in Colgate and GL-70 in Gleem.

The American Dental Association has called on Congress to enact legislation giving federal agencies more control over misleading advertising claims.

PANAMA DENTAL ASSOCIATION ELECTS OFFICERS AND BOARD

The following officers and board of directors of the Asociación Odontológica Panameña have been elected:

President, Rodrigo Eisenmann; vice-president, Silio G. Ortíz; corresponding secretary, Marta Villalaz G.; treasurer, Carlos Fábrega; cultural and scientific secretary, Rebeca Minutto de Rosypal; secretary of press and public information, Aurelio Ocaña G.; technical consultant, Edilberto Grimaldo; editor of *Odontologo*, Omar A. Rodríguez S., and director of 3a Semana Odontológica Nacional y III Congreso Odontológico Istmeno, Alfredo Berguido G.

AMERICAN DENTAL SOCIETY OF EUROPE TO MEET IN SWEDEN

For the first time in 21 years the annual meeting of the American Dental Society of Europe will be held in Stockholm, Sweden.

Sessions will be held July 7-10 in the Apollonia Hotel which is run by the Dental Society of Sweden. There will be a social program in addition to the essay and clinic programs. The annual golf outing will be held at the Stockholm Golf Club, July 6.

Reservations can be made through the Apollonia Hotel, Nybrogatan 53, Stockholm.

EUROPE FLUORINE STUDY UNIT TO MEET IN PAVIA JULY 3-5

The European Organization for Research on Fluorine and Dental Caries Prevention will hold its 6th Congress July 3-5 in Pavia, Italy.

The free lecture part of the scientific program, under the direction of Dr. Rudolph Naujoks of the dental institute of the University of Hamburg, Eppendorf, Germany, will be devoted to research papers dealing with the subjects, "The Bacteriology of Dental Caries," and "Saliva and Caries."

Professor Dr. Silvio Palazzi of Milan is chairman of the organizing committee of the Congress.

L. J. BAUME, SWITZERLAND, TO GIVE ROWLETT LECTURE

The second Commemoration Lecture in honor of the memory of Dr. A. E. Rowlett will be given in New York September 12 at the 47th Annual Meeting of the Fédération Dentaire Internationale in conjunction with the Centennial Session of the Association.

Professor L. J. Baume of Geneva, Switzerland, will lecture on the late Professor Alfred Gysi, distinguished Swiss dentist who contributed much to the development of the anatomic articulator.

The Commemoration Fund was established on the death of Alfred Rowlett to enable a commemorative lecture to be given on his life and work and subsequently on those of other members of the odontostomatological profession who have rendered distinguished services to the FDI. Initially the sum of approximately £300 was donated from various sources.

It is hoped that further donations will be forthcoming. Contributions can be sent to the National Treasurer for the Fédération Dentaire Internationale in the United States, Obed H. Moen, 6 Main St., Watertown, Wis.

Dental Education

GEORGETOWN DEDICATES TWO MEDICAL CENTER BUILDINGS

Two new buildings important to the health sciences were dedicated March 19 at Georgetown University, Washington, D. C.

Architect's sketch of the $3,000,000 Lawrence C. Gorman diagnostic and research building recently dedicated at Georgetown University, Washington, D. C. Clemens V. Rault (inset), dean of the Georgetown University School of Dentistry, was awarded an honorary Doctor of Science degree at the dedication ceremonies in March.

The $3,000,000 Lawrence C. Gorman diagnostic and research building and the $1,227,000 Kober-Cogan dormitory for medical and dental students were formally opened in the morning.

In the afternoon the honorary Doctor of Science degree was conferred on Clemens V. Rault, dean of the Georgetown University School of Dentistry. Dr. Rault was graduated from Loyola University School of Dentistry, New Orleans, in 1918. Entering the Naval Dental Corps in the same year, he rose through the ranks to Chief of the Dental Division of the U. S. Navy with the rank of Rear Admiral. He voluntarily retired in 1950 to become dean of the Georgetown University School of Dentistry.

He is the author of numerous articles on professional and naval subjects and a member of many dental and related societies. At present Dr. Rault is a member of the Special Medical Advisory Group to the Administrator of the Veterans Administration in Washington, D. C. He is also a consultant at the National Institutes of Health at Bethesda, Md., and chairman of the Advisory Committee on Public Health to the Commissioners of the District of Columbia.

Dr. Arthur S. Flemming, Secretary of Health, Education, and Welfare, who was given an honorary Doctor of Laws degree, delivered the convocation address.

The new Gorman building will have an enlarged outpatient dental department that will allow a 100 per cent increase in dental treatment for patients undergoing general medical care in the outpatient department. At present 25 cleft palate patients are under treatment in the dental school and this number can now be expanded. A large oral surgery clinic will be available with two operating rooms and adjacent recovery rooms.

The Gorman building also will make possible an increase in dental research programs at Georgetown.

The new dormitory stands in the University's Medical Center area. Air-conditioned throughout, it houses 200 students in double rooms, has six stories and a basement.

PITTSBURGH HOSPITAL INVITES INTERNSHIP APPLICATIONS

The Veterans Administration Hospital, Leech Farm Road, Pittsburgh, announces that it is now accepting applications for its 12 month dental rotating internship which starts July 1.

The hospital's dental service is approved by the American Dental Association's Councils on Dental Education and Hospital Dental Service.

Further information can be obtained by writing to: Chief, Dental Service, Veterans Administration Hospital, Leech Farm Road, Pittsburgh 6.

INTERNSHIP AVAILABLE IN PHILADELPHIA V.A. HOSPITAL

The Veterans Administration Hospital, Philadelphia, has a one year rotating dental internship available July 1. The program is given in cooperation with the affiliated dental and medical schools, and faculty members present seminars in all specialties.

The stipend is $2,500 per annum. A certificate of internship is issued by the hospital.

Application should be made to: Dr. S. L. Green, chief, Dental Service, Veterans Administration Hospital, University and Woodland Aves., Philadelphia 4.

LOYOLA OFFERS TWO-YEAR PROGRAMS IN GRADUATE WORK

The graduate division of Loyola University School of Dentistry, Chicago, is now interviewing applicants for classes beginning in September 1959.

Two-year, full-time programs are offered in the fields of oral surgery, oral pathology, oral anatomy, prosthetics and periodontics. On successful completion of the requirements, candidates are awarded Master of Science degrees in oral anatomy.

Applications and detailed information can be obtained by writing to the chairman, Graduate Division, Loyola University School of Dentistry, 1757 W. Harrison St., Chicago 12.

UNIVERSITY OF MINNESOTA ANNOUNCES ANNUAL SEMINAR

The University of Minnesota, School of Dentistry, and the Center for Continuation Study, announce the 14th annual seminar for the study and practice of oral medicine. Sessions will be held at the Continuation Center in Minneapolis September 25 and 26.

Further details can be obtained by writing to: Center for Continuation Study, University of Minnesota, Minneapolis 14.

SCHOOLS LIST SUMMER, EARLY FALL POSTGRADUATE COURSES

California • Two courses are offered by the University of California School of Dentistry, Postgraduate Education, San Francisco. Robert B. Shira will conduct a course in surgery for the general practitioner May 22, 23. A class in habilitation of the cleft palate patient will be directed by Charles S. Lipp June 24-27.

Kansas City • The University of Kansas City School of Dentistry lists three postgraduate courses for the fall. On September 3 and 4 Gunnar Ryge will direct a course on materials in dentistry. Faustin N. Weber and an associate will conduct a course on preventive and and interceptive orthodontics October 14-16, and prosthetics will be taught by Bernard Jankelson November 4-6. Applications should be sent to the school at 1108 East 10th Street.

Massachusetts • The department of stomatology, Division of Graduate Studies, School of

Eight Latin-American dentists recently completed the only Spanish-language postgraduate course conducted in the United States. The intensive four week course in periodontics and oral medicine was given this spring for the sixth consecutive year by New York University's College of Dentistry. Director of the course is Sidney Sorrin, professor and chairman of the college's department of periodontics and oral medicine. He was assisted by Anthony F. Posteraro and George J. Witkin. Seated (l. to r.) are: Dr. Posteraro, Isabel Hernandez, Santiago, Chile; Zambrano de Ramirez, Maracaibo, Venezuela; Dr. Sorrin; M. del Pilar Fernandez, Parral, Mexico; Dr. Witkin. Standing are: Gervasio Briceno Ricci, Caracas, Venezuela; Henry Briones Puchendordt, Guatemala City, Guatemala; Roberto Miquel Giacchella, Buenos Aires, Argentina; Alejandro Giammattei Caceres, Guatemala City, and Jaime Arango, Colombia, South America.

Medicine, Boston University and the Massachusetts Memorial Hospitals, announce the following courses:

Periodontal therapy, October 19-24, by Henry M. Goldman, Bernard S. Chaikin and staff; technics in the general practice of dentistry, October 26-31; occlusal adjustment, November 2-6, Henry M. Goldman, Bernard S. Chaikin and staff; complete denture prosthesis, November 9-13, Chester Landy; fixed denture prosthesis, November 16-20, Leo Talkov and David J. Baraban; immediate root resection, November 30-December 4, Herbert Schilder.

Michael Reese • The department of dentistry, Michael Reese Hospital and Medical Center, Chicago, announces a six day course in diagnosis in dental practice—procedure and clinical application, June 22-27. Tuition fee is $200. The complete program can be had by writing to the department at 29th Street and Ellis Avenue, Chicago 16.

New York • A one week course in the principles and practice of dental care for patients with chronic disease and disability will be given May 18-22 by the department of graduate and postgraduate prosthodontics of New York University. The teaching staff includes members of the faculty and professional staff of the New York University Dental and Medical Centers.

Also, a one week course to familiarize practicing dentists with the latest theories of diagnosis and treatment of cleft palate prosthesis will be given May 25-29. Sidney I. Silverman is in charge of the course.

Applications for both courses can be obtained by writing to: Postgraduate Division, New York University College of Dentistry, 121 First Avenue, New York 10.

North Carolina • The School of Dentistry of the University of North Carolina will offer a course in clinical periodontics and oral pathology June 2-6. Members of the school staff will teach and guest lecturer will be Gilbert J. Parfitt. Enrollment is limited to ten and the fee is $200. Applications should be sent to the school at Box 750, Chapel Hill, N. C.

Oregon • The following courses are listed at the University of Oregon Dental School, 611 S. W. Campus Drive, Sam Jackson Park, Portland 1: anatomy of mandibular joint, May 11-13, by Harry Sicher; complete mouth reconstruction, May 18-22, John C. Bartels; oral surgery, May 25-29, Robert Shira; silver amalgam, June 8-12, Miles R. Markley; dentistry for children, June 14-19, Charles A. Sweet; advanced pedodontics, June 22-26, I.

Irwin Beechen and George Boone; prosthetics, June 29-July 1, Merrill G. Swenson.

Pennsylvania • The University of Pennsylvania School of Dentistry is offering three interesting courses this spring. Robert E. DeRevere and staff will teach the use of high-speed instruments and equipment in a refresher course May 20, 21. A postgraduate course in immediate root resection will be given under the direction of Louis I. Grossman June 1-6, and the twin wire mechanism will be taught by Joseph E. Johnson June 1-5. Applications may be sent to the division of postgraduate studies of the dental school. The address is 4001 Spruce Street, Philadelphia 4.

Tufts • Two September courses will be offered at the Tufts University School of Dental Medicine, Division of Graduate and Postgraduate Studies, 136 Harrison Avenue, Boston. They are:

A special participation course in complete denture prosthesis, September 21-25, directed by Philip Williams, and cosmetic variations in jacket crown and bridge restorations involving periodontal lesions, September 21, 22, directed by Charles L. Pincus.

Washington • A two day refresher course in diagnosis and treatment planning for complex restorative procedures will be given May 22, 23 at the University of Washington School of Dentistry, Seattle. Tuition is $50 and enrollment will be limited to 12.

Public Health

AMERICAN BOARD OF DENTAL PUBLIC HEALTH ELECTS

The officers and new member of the American Board of Dental Public Health elected at the Dallas meeting are: president, Philip E. Blackerby, Jr.; vice-president-auditor, Robert A. Downs; secretary-treasurer, Chester V. Tossy, and member (to succeed John W. Knutson), John T. Fulton.

The Board will hold its next certifying examination September 10-11 in New York City in conjunction with the annual meeting of the American Dental Association. Candidates for this examination must submit their applications to the secretary of the Board not later than May 10. Information and application forms may be obtained from: Dr. Chester V. Tossy, Michigan Department of Health, Lansing, Mich.

FRIEDRICH VICE-PRESIDENT OF NATIONAL HEALTH COUNCIL

Rudolph H. Friedrich, secretary of the Association's Council on Dental Health, was elected one of three new vice-presidents of the National Health Council at its annual meeting in Chicago in March.

Dr. Ruth B. Freeman, associate professor of public health administration at Johns Hopkins University, was installed as president, and Dr. James E. Perkins, managing director of the National Tuberculosis Association, was chosen president-elect.

General

DENTAL SCHOOLS ASSOCIATION REVISES ITS CONSTITUTION

At its 36th annual session held in March in San Francisco, the American Association of Dental Schools voted approval of a complete revision of its constitution and bylaws. They will be patterned substantially after the organizational structure of the American Dental Association.

Robert W. McNulty, dean of the School of Dentistry, University of Southern California, was elected president of the association. Other officers elected were:

President-elect, Raymond J. Nagle, dean of the College of Dentistry, New York University; vice-president, Lester W. Burket, dean of the Thomas W. Evans Museum and Dental Institute, School of Dentistry, University of Pennsylvania. George W. Teuscher, dean of Northwest-

ern University Dental School, and Harry Lyons, dean of the School of Dentistry, Medical College of Virginia, were elected to continuing membership on the executive council of the association, and O. M. Dresen, dean of the School of Dentistry, Marquette University, and Maurice J. Hickey, dean of the School of Dentistry, Washington University, were named to new positions on the executive council, managing body of the association.

John E. Buhler, dean of the Emory University School of Dentistry, and Francis J. Conley, professor, School of Dentistry, University of Southern California, were nominated to membership on the American Dental Association Council on Dental Education and the Council of the National Board of Dental Examiners.

ORAL SURGEONS MEET PRIOR TO CENTENNIAL SESSION

The American Society of Oral Surgeons will hold its annual meeting at the Biltmore Hotel, New York, September 9-12, just prior to the Centennial Session of the American Dental Association.

The program committee, under the direction of Robert B. Shira, plans to utilize the full four days for both scientific and business sessions.

BOSTON UNIVERSITY GIVEN $25,000 FOR RESEARCH LAB

Establishment of a research laboratory for the department of stomatology of the Boston University School of Medicine has been made possible by a $25,000 gift from Boston industrialist George Sherman. The announcement was made jointly by president Harold C. Case of the University and Dr. Chester S. Keefer, dean and director of the School of Medicine.

The laboratory, to be known as the George and Beatrice Sherman Research Laboratory, will be located in the school's $3,000,000 medical research building which is now under construction. The building is scheduled to be completed in the fall of 1960. Henry M. Goldman is chairman of the department of stomatology.

Mr. Sherman, president and treasurer of Sherman Paper Products Corp., Newton Upper Falls, Mass., is an honorary trustee of Beth Israel Hospital and a trustee of both Newton-Wellesley and the Jewish Memorial Hospitals.

WOMEN DENTISTS' MEETINGS PLANNED DURING CENTENNIAL

The Association of American Women Dentists will meet Monday, September 14, in the Hotel St. Moritz, 59th Street and Central Park South, New York.

Breakfast and a business meeting will begin at 9 A.M. and a banquet will be held at 6:30 P.M. A hospitality room will be maintained at the St. Moritz, at which visiting women dentists will be welcome.

Further information can be obtained from the secretary, Goldanna Cramer, 95 W. Broadway, Salem, N. J.

L. M. FITZGERALD HONORED FOR WORK IN ORAL SURGERY

Leslie M. FitzGerald of Dubuque, Iowa, past president of the Association, has been presented the annual Arnold K. Maislen Memorial Award of New York University for a major contribution to oral surgery.

Dr. FitzGerald is secretary of the American Board of Oral Surgery and a past president of the American Society of Oral Surgeons.

CALIFORNIA BUDGET PLAN PAYS DENTIST 100 PER CENT

As of April 1, no portion of the dentist's fee for accounts financed under the Postpayment Plan sponsored by the California State Dental Association will be with-

The Academy of General Dentistry held its annual luncheon meeting February 10 at the Conrad Hilton Hotel, Chicago. Seen at the speakers table are (l. to r.): Harold Plotts; William Simon, dean, University of Iowa College of Dentistry; John C. Brauer, dean, University of North Carolina School of Dentistry; George Carey; T. V. Weclew, president of the Academy; Paul Jeserich, dean, University of Michigan School of Dentistry and president-elect of the American Dental Association; George Holmes, director of postgraduate studies of the Academy; James Mershimer, vice-president of the Academy, and A. L. Knab, secretary. (Persons in foreground are unidentified.)

held, according to Charles M. Silk of San Francisco, chairman of the association's postpayment plan committee.

The Bank of America has notified dentist members of the plan that the success of the program enabled the bank to eliminate the 2 per cent which it had been withholding from each dental service fee since October 1956.

Bank officials indicated to the state association that they will review the ratio of reserve to outstanding indebtedness from time to time and unless it is discovered the reserve has become seriously depleted, no further withholding will be necessary.

DENTAL EXAMINERS TEST OVER 2,600; LARGEST GROUP YET

The Council of the National Board of Dental Examiners announces that it conducted the spring sessions of examinations April 2 and 3 and tested over 2,600 applicants in Part 2 of the examinations. In Part 1, over 2,400 were tested. This is the largest group of examinees ever tested.

The results of this examination are used by 33 State Boards of Dental Examiners in lieu of written examinations in those states. The applicant must participate in the clinical test given by each state.

Grades in the examinations will be available after May 15.

GETZ CORPORATION LAUNCHES DENTAL INFORMATION SCHEME

The William Getz Corporation of Chicago, manufacturers of dental supplies, recently inaugurated a campaign to help dental societies bring information about dental health to millions of newspaper readers.

The company is conducting a nationwide poll of dentists, asking them to help choose the subjects for "Headlines in Dental History," a cartoon feature series.

The first "Headline" will tell the story of the dental use of roentgen rays and every dentist who votes in the poll will receive a large reproduction suitable for a reception room poster.

The ballots also will be used at the annual session of the American Dental Association in New York in September in a drawing for an RCA color television set.

S. MAYO SILVERMAN, PROMINENT ON COAST, DIES SUDDENLY

Samuel Mayo Silverman, 49, died suddenly March 17 at a meeting of the Council on Dental Health of the Southern California State Dental Association. His home was in Los Angeles.

Dr. Silverman, a past president of the Los Angeles County Dental Society, was completing his third term as secretary of the Southern California State Dental Association.

A Fellow of the American College of Dentists, Dr. Silverman also was a member of the American Denture Society and a member of the board of directors of the American Academy of Practice Administration. He served many years as a member of the A.D.A. House of Delegates.

WESTERN RESERVE SLATES ALL-DAY ALUMNI MEETING

The School of Dentistry of Western Reserve University, Cleveland, has a full program planned for the day and evening of Wednesday, May 20, for its annual All-day Alumni Meeting.

At the morning session in the Student Union there will be a talk on stocks and investments, a panel discussion on hypnosis, and a practical experiment of hypnosis.

The afternoon session, to be held at the School of Dentistry, will be devoted to closed circuit television lectures by Robert Bruckner and Stanley Suit on gingivectomy.

After dinner at Wade Park Manor, Joe Newman will speak on the "Newman System of Lower Education."

TOOTH GUARD CUTS HIGH SCHOOL GRID INJURIES

A sharp decline in the number of mouth injuries and brain concussions among high school football players has been reported by the supervisor of dental service for the School District of Philadelphia. The reason lies in the use of specially fitted mouth guards.

Abram Cohen, member of the faculty of the University of Pennsylvania School of Dentistry, reported that among the 713 Philadelphia boys using the guards last fall only one tooth injury and one concussion were reported. This compares with 21 tooth injuries and 26 concussions reported after the 1957 high school football season, when no mouth guards were used as standard equipment.

The guards, some of molded latex and some of a harder plastic material, were prepared by dental students at the University of Pennsylvania and Temple University.

The guards protect the teeth by holding both jaws in one firm position and not permitting them to be banged against each other, Dr. Cohen said.

PLAN COMPREHENSIVE SEMINAR ON IMPLANT DENTURE TECHNIC

Plans are being completed for what is described as the most elaborate and comprehensive seminar on implant dentures that has ever been undertaken.

The seminar, sponsored by the American Academy of Implant Dentures, will be held in New York September 11-13, the three days preceding the Centennial Session of the American Dental Association.

The entire field of implant development will be reviewed, including laboratory animal experimentation and histo-

Jens Waerhaug of the Norwegian State Dental School, Oslo, recently lectured at the National Naval Medical Center, Bethesda, Md. Shown (l. to r.) are Captain E. G. F. Pollard, DC, USN, Commanding Officer, Dr. Waerhaug, and Captain James A. English, DC, USN, Head, Medicine and dentistry branch, Biosciences Division, Office of Naval Research.

pathology, development of rational technic, and newer anatomical knowledge relating to implants.

In addition to the symposium which will be held at the Hotel Plaza, the seminar will include the surgical implant impression procedure and the surgical insertion of an implant on a second patient. These procedures will be done at New York Polyclinic Hospital.

Because of the physical limitations of a seminar of this magnitude, attendance must be limited, preferably to those who have a good surgical-prosthetic background plus a serious interest in improving prosthetic service to the more difficult denture patient.

Enrollment fee is $50 and applications must include a check for this amount. Applications should be sent as soon as possible to: Isaih Lew, program chairman, 200 Central Park South, New York 19. Applicants also are urged to make early hotel reservations through the Housing Bureau of the American Dental Association.

NORTHWESTERN ALUMNI PICK SITE FOR ANNUAL LUNCHEON

The annual Northwestern University Dental Alumni luncheon will be held Tuesday, September 15, at the Tavern on the Green Restaurant in Central Park, New York.

Alumni from other countries who will be attending the 46th annual session of the Fédération Dentaire Internationale are especially urged to attend. Principal speaker will be Dean George W. Teuscher, and Walter Mosmann, president of the New York Alumni Club, will preside.

Those planning to attend must obtain their tickets no later than Monday, September 14. These may be obtained at the Northwestern registration desk in the registration area of the Coliseum.

CANNED FRUIT FOR PERSONS ON SUGAR-RESTRICTED DIETS

Persons on sugar-restricted diets will find it much easier to distinguish artificially sweetened canned fruits from those packed in sugar syrup under special standards developed by the Food and Drug Administration.

Under the new standards, the words "artificially sweetened" will appear on the label as part of and ahead of the name of the fruit, FDA officials said.

In addition to the prominent identification of such fruits as "artificially sweet-

ened," the labels will include the common name of the artificial sweetener, its percentage by weight, and the number of calories in an average serving of the canned product.

SOUTHERN ACADEMY SCHEDULES MEETING ON PERIODONTICS

The prevention and treatment of periodontoclasia will be discussed when the Southern Academy of Periodontology holds its annual meeting June 11-13 in Gatlinburg, Tenn.

All interested persons are invited to attend. Reservations should be made through the Riverside Hotel where the sessions will be held.

F.B.I. SEEKS MAN WANTED FOR MURDER, ALERTS DENTISTS

The Federal Bureau of Investigation has asked the American Dental Association to alert its members to be on the lookout for a dangerous fugitive who may seek dental treatment.

James Eddie Diggs, also known as Dick Diggs or Smitty, is being sought for unlawful flight to avoid prosecution for the crime of murder.

On May 26, 1949, Diggs is alleged to have shot and killed his wife and two small sons, ages six and four. On May 31, 1949, Diggs shot and seriously wounded a police officer at Hamlet, N. C., while avoiding arrest.

Diggs reportedly suffered with periodontal disease during the early 1940's and reportedly has a noticeable space between his upper front teeth and has an upper left gold incisor. Following is the F.B.I.'s description of him:

Born May 29, 1913, Morven, N. C. Height 6 feet. Weight 165 pounds. Build slender, with slightly stooped shoulders.

James Eddie Diggs

Hair, black; eyes, brown; race, Negro; nationality, American. Occupation, airplane mechanic, bus driver, truck driver, plumber's helper and carpenter. No scars or marks known. Diggs may wear a mustache and formerly wore glasses, as he is extremely farsighted. He reportedly makes a sucking sound with his teeth when nervous. He reportedly drinks intoxicants to excess occasionally.

Any person having information which might assist in locating this fugitive is requested to notify immediately the Director of the Federal Bureau of Investigation, United States Department of Justice, Washington 25, D. C., or the Special Agent in Charge of the nearest Federal Bureau of Investigation Division, the telephone number of which appears on the first page of local telephone directories.

Diggs should be considered armed and extremely dangerous and has suicidal tendencies.

A CORRECTION

On page 121 of the March issue of THE JOURNAL identification of Charles H. Patton, in a picture of him receiving an award from the University of Pennsylvania General Alumni Society, was in error. Dr. Patton is at the left in the picture.

the reader comments

THE JOURNAL *devotes this section to comment by readers on topics of current interest to dentistry. The editor reserves the right to edit all communications to fit available space and requires that all letters be signed. At the request of the author, signatures will be deleted before publication. Printed communications do not necessarily reflect the opinion or official policy of the Association. Your participation in this section is invited.* *The Editor*

LOWLY PROFESSION?

Recently I read of the "sharp protest" against a columnist (Hearst writer, Jim Bishop), who stated the terrors of and posed his evaluation of this lowly profession—dentistry.

Suddenly the cry of the high and powerful arises only to become a whisper within the short time of a month. Does it occur to anyone how or why such a person or group could derive so much attention by criticizing without any realistic experience? The responsibility for such articles rests with every dentist in every State within the Union.

The greatest problem within dentistry is that of patient education, not those people who visit your office, but those millions who do not.

This public education regarding dentistry must be done by dentists who are qualified writers utilizing every form of mass media available for the dissemination of such knowledge. To do this the dentists, through the American Dental Association, must reevaluate their differentiation between desired public education and professional advertising. Dentistry then can give to the public knowledge of available dental health services.

Should the false concepts of ethics continue along with lethargy noted elsewhere within the profession, we can expect those from without, who know nothing of dentistry, to continue selling short our profession for whatever dramatic effect they can get.

Let us designate noted scholars within the ranks of dentistry to sell modern dentistry by giving knowledge to the readers of newspapers and other periodicals at no more expense than ten minutes a day.

When doctors of dentistry teach (doctor means "to teach"), as they should be allowed to do, these writers for profit will decrease in number and importance.

The public will then have adequate knowledge with which to evaluate dentistry truly.

D. E. Stikeleather, D.D.S.
121 East Kirkwood Avenue
Bloomington, Indiana

SIGMUND FREUD

In the July 1957 issue of your excellent journal, you published a review of the book *Sigmund Freud* by Prof. Dr. A. Mette.

We are grateful for this review which obviously has found an enormous attention in the United States because all available copies were sold out a short time after the review appeared.

Professor Mette has supplemented the biographic work by writing an addendum in which he considers the effect of I. P. Pavlov's theories and the pathodynamic hypotheses of the development of neuroses and psychoses on Freud on his teaching. This is in the new and enlarged edition of the book.

Thanking you for your splendid review, we are

Editors Hauckold and Bock
Veb Verlag Volk und Gesundheit
(Public Health Publishing Company)
Neue Grunstrasse 18
Berlin C 2, Germany

BOOTLEG DENTISTRY

In the various issues and procedures in local and national dental policies there are many opinions among our members. However, there are some vital matters that face us that should have unanimous support and unity.

I refer to our stand on bootleg dentistry as practiced by laboratories and individuals. I include in this category patients sent, or going on their own, to laboratories. This is a dangerous practice for the patient and for dentistry.

The repair of a denture or bridge is not a purely mechanical procedure any more than the inserting of a Vitallium pin in the bone is entirely a mechanical process. In each case the tissues in the region being treated should be examined by a qualified physician or dentist.

I would say that this situation should be corrected and that we of the dental profession give such patients the care, skill and judgment required.

If we don't, or can't, manage this phase of dentistry ourselves, someone else will. They are trying to do it now.

Edward J. Slattery, D.D.S.
2025 Eye St., Washington 6, D. C.

ACTA ODONTOLOGICA SCANDINAVICA

At the Fédération Dentaire Internationale meeting in Brussels last summer, it was my privilege to see a copy of Acta Odontologica Scandinavica and to discuss the objects of the magazine with the editor, Dr. P. O. Pedersen of Copenhagen.

The publication is a quarterly journal presenting progress in Scandinavian dentistry and published by the Scandinavian dental associations and schools. It contains articles on all phases of clinical dentistry and research with manuscripts accepted only from authors from the Scandinavian countries. The journal thereby offers a representative cross section of the most recent work in that part of the world.

The journal is printed on very fine paper and contains many diagrams and halftone reproductions and is, of course, printed in English.

The annual subscription for the journal is $8.50 plus 75c postage (total $9.25). Subscription requests can be filled by writing to: Acta Odontologica Scandinavica, Svenska Tandlakare-Sallskapet, 53 Nybrogatan, Stockholm O, Sweden.

Obed H. Moen, D.D.S.
6 Main Street, Watertown, Wis.

cases and comments

THE DENTAL PRACTITIONER AND HEARING

By Jerome S. Mittelman, D.D.S., New York.

Protection of each individual dentist's health is a necessity both for self-interest and so that he might serve better and longer.

Many health hazards have been recognized, and their challenges have been dealt with. Today's practitioners take measures to control radiation exposure, use the operating stool more frequently, control illumination and have regular eye examinations. They are generally eager to afford themselves every opportunity to maintain good health. All this is necessary because dental treatment exposes operators to definite health hazards.

A series of recent developments required a look into the possibility of diminished hearing with time. Consulting with ear, nose and throat specialists has convinced the author that regular audiographs taken over a period of time could be of great benefit to those who regularly use ultrasonics for scaling teeth and preparing cavities, and for those dentists who use the air turbine handpiece. The whine of the turbine and the ultrasonic stimulation could possibly damage hearing apparatus and affect hearing at the conversational level. It has been pointed out that it is not the loudness of noise but the vibrations per second that can do definite irreparable damage over a period of time.

Cotton saturated in olive oil, squeezed of excess, can be used for ear plugs to minimize the hazard. This step offers good protection and may prevent diminished hearing. Certainly not enough is yet known about the effect of these instruments to succumb to complacency and neglect. It would be wise to take measures while the choice still remains available.

To be of maximum service and represent his profession best, the individual dentist must protect his health in every way practical. Hearing is one of the senses he depends on a great deal. Use of precautions to safeguard hearing is just good sense.

30 East 60th Street

EXTERNAL AND INTERNAL RESORPTION OF A PERMANENT TOOTH

By Joseph M. Gould, D.D.S., and Gene G. Gould, D.D.S., New York

In the deciduous dentition there is a normal resorption of the roots of the teeth prior to shedding. The term "pathologic root resorption" may be applied to all other cases, both in the deciduous and permanent dentitions.

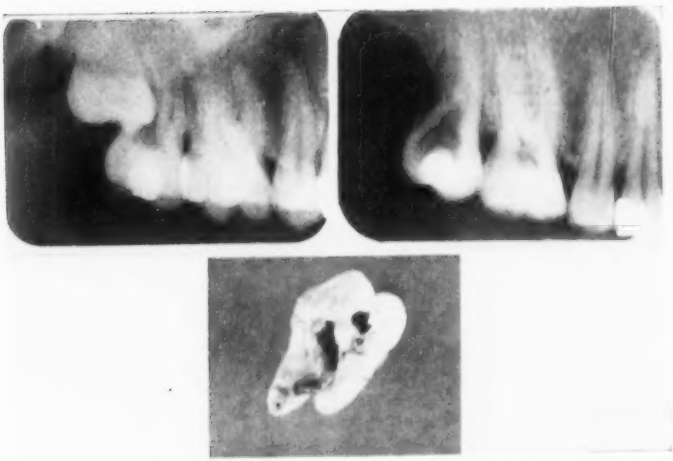
McCall and Wald[1] state that there are two types of pathologic root resorption, which are:

1. External root resorption, which may be induced by: (a) inflammation of the periodontal membrane resulting from trauma, such as occurs with the use of orthodontic appliances, excessive occlusal stress, injuries to the teeth, chemical or bacterial irritation, periapical diseases due to pulp canal infection, and periapical trauma incidental to root canal therapy; (b) pressure from impacted teeth, or (c) proximity of tumors and cysts of the jaw.

2. Internal root resorption, which is a result of local irritation with resulting inflammation in the tooth pulp.

The following description is of an instance of both external and internal resorption occurring in the same tooth.

The patient, a 24-year-old male, appeared in January 1956 complaining of pain in the maxillary left posterior region and the sensation of something growing there. Oral examination revealed the partial ectopic eruption



At left, above, the ectopic eruption of the third molar butting against the second molar. The distobuccal root of the second molar cannot be distinguished. There is evidence of internal resorption in the coronal region of the pulp of the second molar. At right, no distobuccal root of the second molar is seen. The internal resorption has advanced considerably. Below, the extracted tooth shows the foramen where the distobuccal root had once joined the crown.

of the third molar, butting against the distobuccal surface of the second molar. The distobuccal root of the second molar could not be seen on the roentgenogram and internal resorption appeared to be in progress in the coronal region (illustration). The patient was referred to an oral surgeon, and the third molar was extracted.

In March 1958 the patient returned to the office complaining of a vague pain in the maxillary left posterior region. The patient stated that the second molar bled on touch. Oral examination revealed a rather small cavitous area on the buccal surface of the maxillary second molar. Probing the cavity with an explorer produced an exudation of a copious amount of blood. A roentgenogram revealed the continuation of the process of internal resorption. The tooth was extracted. Examination of the tooth revealed the complete absence of the distobuccal root but a large foramen where it normally would join the crown existed, indicating without doubt that a root once was present there.

Comment • Apparently the afore-mentioned was an instance of a permanent second molar undergoing complete resorption of one root and internal resorption of the crown probably progressing to perforation on the buccal surface.

The etiology undoubtedly could be traced to the pressure and proximity of the adjacent third molar (ectopic eruption).

30 Central Park South

1. McCall, J. O., and Wald, S. S. Clinical dental roentgenology. 3rd edition. Philadelphia: W. B. Saunders Co., 1952.

book reviews

PERIODONTOLOGY-CLINICAL PATHOLOGY AND TREATMENT OF PERIODONTAL TISSUES

By Edgar D. Coolidge, M.S., D.D.S., and Maynard K. Hine, M.S., D.D.S. Third edition. 463 illustrations and 2 color plates. Index. $8.50. Philadelphia, Lea & Febiger, 1958.

This, the third edition, is a gratifying contribution to dental literature, reflecting the increased interest in periodontology by the dental profession.

Periodontology is a comparatively young and growing science which develops new concepts and demands revised texts. The authors have met the demand by bringing up to date the discussions of new research and correlating them with modern clinical applications.

The original purpose of this book was to provide a text that would be helpful in the study of problems involved in the treatment of periodontal diseases. This same purpose has been maintained in more modern and complete aspects as knowledge of the subject has developed and increased.

Besides extensive revision, two new chapters have been added which present straight-forward facts and fundamentals. Since this text is primarily prepared for the undergraduate student and general practitioner controversial subjects are avoided. The results of research material are interpreted without complex details and only the essentials are emphasized.

Special attention is given to halitosis, lesions of the tongue, and preventive periodontics. The text concludes with the principles to be observed in the correction of occlusal disharmonies and care of the oral tissues. Perhaps greater elaboration of the two chapters, giving procedures in greater detail, would increase the value of the text and emphasize the importance of preventive periodontics.

The revised and improved third edition makes it ideal for teaching and of value to the general practitioner. It provides concise and comprehensive information on the application of therapeutic measures based on scientific facts.

The comprehensive reference list at the conclusion of each chapter is of particular interest and a great help to the reader.

E. A. Archer

A STEREOSCOPIC ATLAS OF HUMAN ANATOMY

By David L. Bassett, M.D. Section IV: The Thorax. View Master Reels 113-132. $16.50 (2 volumes). Portland, Ore., Sawyer's Inc., 1958.

Since the publication of Section One, Central Nervous System, each following set has been impatiently awaited. The new reels again come up to the high standards and the technical perfection of the preceding volumes. The dissections are flawless and intelligently planned. Walls of the thoracic cavity, lungs, heart and the structures of the mediastinum unfold in a beautiful sequence. It seems to be redundant again to praise the stunning photography.

A few minor points have to be mentioned, less because of their weakness, than because of the high demands that one has learned to make in reviewing this work. Orientation of the topographic relations in Figure 122-4 is difficult, especially the visualization of the sectioned interventricular septum. The displacement of parts of the lung in Figure 125-7 is easily understood, but much less so in Figure 124-7 showing parts of the right lung. In Figure 130-6 few details of the lumbar part of the diaphragm are fully exposed; for example, the crura and the aortic hiatus. Finally it seems an oversight that in Figure 116-2 and some of the following photographs the unusual origin of the right internal thoracic artery has not been brought to the attention of the student. But let this reviewer again express his admiration for Bassett's work.

Harry Sicher

current literature

CERVICOFACIAL ACTINOMYCOSIS: REPORT OF CASE

By Kurt W. Brückel. Deut. med. Wschr. 83:1549 Sept. 5, 1958.

The patient, a 57 year old woman, was treated at the Antibiotic Clinic of the Municipal Hospital of Stuttgart/Bad Cannstatt, Germany. The patient had been referred to the clinic by her dentist because of a persistent cutaneous lesion overlying the right side of the lower jaw which had appeared three years previously.

The patient stated that she had had a severe toothache at the same site prior to the appearance of the lesion. All discomfort, however, had disappeared without dental treatment. Thereafter, however, a progressive swelling appeared which was associated with moderate tenderness and trismus. A metastatic pleural empyema developed which obviously was caused by *Actinomyces israeli*. Both the pleural empyema and the chronic granulomatous lesion of the lower jaw were symptoms of the same disease, actinomycosis.

The region of the oral involvement measured 2.6 to 2.4 cm. in diameter. A small amount of thin, yellowish pus was drained from the orifice of a sinus located at the periphery of the lesion. There was no spontaneous purulent discharge into the oral cavity.

Combined penicillin and tetracycline treatment produced regression of the empyema and the oral lesion. Even after the prolonged administration of these antibiotics, however, multiple extraction of several nonvital teeth was indicated and revealed that active foci of *A.israeli* existed in the gingival pockets.

The later cultured strain proved to be highly sensitive to all customary antibiotics, especially to oleandomycin.

Despite continued tetracycline administration, a severe hyperergic reaction occurred 20 days after the multiple tooth extraction, consisting of polyarthritis, iritis, occlusion of the retrobulbar arteries and thrombosis of the central retinal vein.

The hyperergic reaction responded favorably to prednisone treatment.

This clinical response and the in vitro sensitivity studies indicate that combined antibiotic therapy is effective in cervicofacial actinomycosis. It would appear, however, that larger doses are required in actinomycosis than in tuberculosis. No significant toxic effects were observed.

A definitive evaluation of the effectiveness of the combined antibiotic therapy (penicillin-tetracycline-oleandomycin-prednisone) in localized and disseminated actinomycoses will require a prolonged observation of a larger series of cases.

CANCER ORTHODOXY

By Grantley Walder Taylor. Surg. Gynec. & Obst. 107:658 Nov. 1958.

A great deal of recent writing on the subject of cancer (etiology and treatment) challenges most of the basic assumptions on which the orthodox methods of management have been based.

Although the unwillingness to accept any dogma is a wholesome aspect of the scientific mind, the substitution of an established doctrine by a new and unproved hypothesis serves to confuse the cancer problem without offering any helpful contribution to solve it.

These new heresies have many superficial points of similarity with the religious schisms which characterized the time of the Protestant Reformation. The challenge of the dogma and the rebellion against authority are the points in common. The orthodoxy of the cancer ideology is based not on divine revelations but on the accumulated observations and clinical experiences of generations of practitioners and researchers.

Some of the newer promulgations, such as "biologic predeterminism," seem to parallel the doctrine of original sin. Some of the recent heretics seem to bask in their smug certainty of righteousness which appears to be comparable to the state of grace so eagerly sought by some of the earlier divines.

To sit down with the patient and deplore the entire disease process will not cure malignant tumors nor comfort the sufferer. The attitude of mind that accepts readily the predeterminism to cancer is close to complete despair and decries the practitioner's obligation to endeavor to improve—if not cure—the condition.

The pernicious mischief of these new heresies consists in the fact that they are embraced eagerly by the incompetent and ignorant as a justification for their deviation from approved treatment methods.

To destroy the practitioner's faith in his capacity to modify events in behalf of his patient, to deny the belief that there is (or will be) a way of salvation sanctioned by authority, is to nullify the practitioner's usefulness. Until these heretics can enunciate a formula more constructive than present orthodox doctrines, only harm can result from the dissemination of their unproved theories.

MALIGNANT TUMORS OF THE SALIVARY GLANDS

By F. Wirth. Chir. Praxis 2:231 June-Aug. 1958.

Patients with tumors of the salivary glands, especially of the parotid gland, but also with neoplasms of the submaxillary and sublingual glands, were observed at the Dental Clinic of the University of Graz, Austria. Besides their complex pathologic anatomy, these tumors present clinical aspects which make surgical treatment and roentgenotherapy difficult.

Histologically, simple epithelial tumors and mixed tumors must be distinguished as to whether they are of a localized or invading type. The mixed salivary tumors differ from simple tumors only in their relation to epithelial and connective tissues.

With the exception of the comparatively rare adenomas and fibromas, all epithelial tumors of the salivary glands are malignant in various degrees, independent of their apparent structure. Like all other malignant tumor types, they possess the property of spreading locally by direct infiltration of the tissues of the involved gland, regionally through the lymphatic vessels, and distantly through the lymphatic and blood vessels. Death occurs from a local or a regional invasion, seldom from metastatic transfer.

The growth of salivary tumors is comparatively slow, sometimes rapid after a slow and progressive development or after an interruption of uncontrolled growth. In isolated instances, the tumors develop rapidly at the beginning. Recurrence occurs frequently, especially after surgery and roentgenotherapy. Among the salivary tumors observed at the clinic, 32.9 were recurring tumors of which 22 per cent presented one recurrence and the remainder from two to five recurrences.

The diagnosis must be based on clinical, roentgenographic and histologic examinations. In the differential diagnosis, based on biopsies, caseous bacillary adenopathies must be considered.

The prognosis depends mainly on the histologic characteristics of the tumor, its extent, timely surgical intervention, method of treatment used and the possibility of recurrence. The patient's age also influences the prognosis; before the age of 40 years and after that of 70, the prognosis is more favorable than in other age periods.

Localized mixed tumors of the salivary glands seldom cause death but recur frequently; invading mixed or simple tumors have a mortality rate of about 50 per cent.

Treatment must be conducted with the constant consideration of avoiding recurrence. The slowness with which these tumors usually develop and the relative rarity of distant spread are reasons for the success of early surgical interventions. Efforts must be directed toward complete enucleation, wide excision, total removal of the involved gland if necessary, selective removal of local and regional lymph nodes, and roentgenotherapy or radium (radioisotope) radiation (alpha, beta or gamma rays) in combination with or after surgical intervention. Each method presents certain advantages and disadvantages, and the indication depends on the circumstances. The disadvantages are extreme cicatrization and the possible development of salivary fistulas and facial paralysis.

Among the 530 patients treated at the clinic, 280 (52.8 per cent) had no symptoms of new or recurrent tumors after an observation period varying from four months to 16 years. It is suggested, however, that results could be improved by use of radioactive cobalt (Co^{60}).

deaths

Adlerstein, Nathan, Newark, N. J.; University of Pennsylvania School of Dentistry, 1924; died January 17; age 59.

Albright, LeRoy, Republic, Wash.; North Pacific College of Oregon School of Dentistry, 1917; died January 19; age 66.

Allen, Elmer D., Portland, Ore.; North Pacific College of Oregon School of Dentistry, 1913; died January 22; age 66.

Arnold, Frank N., Glendale, Calif.; University of Southern California School of Dentistry, 1901; died November 22; age 82.

Barb, William E., Indianapolis; Indiana University School of Dentistry, 1926; died January 7; age 56.

Barlow, Clarence S., Shreveport, La.; Southern Dental College, 1913; died January 17; age 70.

Bast, Edward J., Milwaukee; Northwestern University Dental School, 1907; died January 17; age 78.

Baxter, Glenn B., Munising, Mich.; Northwestern University Dental School, 1923; died January 12; age 62.

Beer, Herman H., New York; New York College of Dentistry, 1916; died November 28; age 62.

Belknap, Emmett A., Steubenville, Ohio; Cincinnati College of Dental Surgery, 1923; died January 19; age 74.

Benjamin, Charles W., Healdsburg, Calif.; University of California College of Dentistry, 1902; died January 7; age 86.

Benson, Ernest E., Omaha; Western Dental College, 1919; died January; age 62.

Bernstein, Louis, Brooklyn; Pennsylvania College of Dental Surgery, 1905; died January 13; age 75.

Birkenbeil, William, Cincinnati; University of Berlin Dental College, Berlin, Germany, 1921; died January 3; age 62.

Bloom, Thura L., Weatherford, Texas; Ohio Medical University College of Dentistry, 1904; died January 7; age 75.

Bogdanoff, Rubin, Folsom, Pa.; Temple University School of Dentistry, 1955; died January 12; age 26.

Bonney, Harold E., Norfolk, Va.; Baltimore College of Dental Surgery, University of Maryland, 1912; died January 16; age 69.

Brown, Dillard H., Detroit; died December 31; age 84.

Burkinshaw, Herbert J., Meriden, Conn.; Harvard Dental School, 1920; died January 11; age 60.

Cain, Samuel Richard, Cambridge, Ohio; Ohio College of Dental Surgery, University of Cincinnati, 1914; died October 27; age 64.

Campbell, Lester H., Seattle; North Pacific College of Oregon School of Dentistry, 1927; died August 30; age 54.

Campbell, Louis B., DeBary, Fla.; Philadelphia Dental College, 1903; died January 9.

Campion, Sylvester J., Saint Cloud, Minn.; Marquette University Dental School, 1919; died October 31; age 65.

Clark, Guy S., Milwaukee; Marquette University Dental School, 1926; died December 26; age 63.

Clayborne, Herman G., Birmingham, Ala.; Meharry Medical College School of Dentistry, 1925; died December 31; age 68.

Cloud, Carrick C., Knoxville, Tenn.; University of Tennessee College of Dentistry, 1924; died January 10; age 66.

Coffey, George L., Knoxville, Tenn.; Louisville College of Dentistry, 1910; died December 21; age 78.

Colligan, Francis J., San Francisco; University of California College of Dentistry, 1906; died January; age 78.

Contole, Henry A., Philadelphia; Temple University School of Dentistry, 1931; died January 23; age 50.

Corbett, William F., Houghton, Mich.; Chicago College of Dental Surgery, 1903; died November 22; age 78.

Craig, Santon H., New York; Howard University College of Dentistry, 1929; died December 29; age 60.

Cramer, Arthur J., Buffalo; University of Buffalo School of Dentistry, 1910; died December 31; age 71.

Cresmer, Charles E., Long Beach, Calif.; University of Southern California School of Dentistry, 1936; died November 6; age 47.

Davidson, Frank E., Shelby, Mich.; University of Michigan School of Dentistry, 1910; died November 25; age 71.

Davis, Walter S., Braintree, Mass.; Harvard Dental School, 1897; died January 13; age 84.

Dearing, Dana E., South Royalton, Vt.; Tufts College Dental School, 1904; died January 4; age 78.

Deffenbaugh, Paul H., Mount Pleasant, Pa.; University of Pittsburgh School of Dentistry, 1918; died August 9; age 62.

Dolak, John P., Philadelphia; University of Pennsylvania School of Dentistry, 1921; died December 28; age 64.

Dougherty, Frank H., Pittsburgh; University of Pittsburgh School of Dentistry, 1906; died December 28; age 79.

Dowden, James E., Jr., White Sulphur Springs, W. Va.; Pittsburgh Dental College, Western University of Pennsylvania, 1906; died January 10; age 75.

Durham, Edward F., Woonsocket, R. I.; St. Louis University School of Dentistry, 1933; died January 8; age 52.

Dysart, Marion E., Atchison, Kan.; Meharry Medical College School of Dentistry, 1920; died November 21; age 65.

Edwards, Thomas F., Tampa, Fla.; Cincinnati College of Dental Surgery, 1905; died November 6; age 81.

Elion, Robert, Bronx, N. Y.; College of Dental and Oral Surgery, 1914; died December 28; age 67.

Esgate, Thomas D., Riverside, Calif.; Harvard Dental School, 1899; died December 16; age 86.

Esposito, John A., New York; Columbia University School of Dental and Oral Surgery, 1940; died September 10; age 44.

Estabrooks, John W., Lemon Grove, Calif.; Harvard Dental School, 1900; died December 24.

Everett, Raymond C., Waltham, Mass.; Tufts College Dental School, 1919; died January 18; age 66.

Ewry, Elmer F., Dayton, Ohio; Starling-Ohio Medical College, Department of Dentistry, 1911; died January 18; age 70.

Farmer, William C., Washington, D. C.; Georgetown University School of Dentistry, 1914; died December 23; age 69.

Finley, Jasper W., Ridgefield, Wash.; North Pacific College of Oregon School of Dentistry, 1909; died December 30; age 84.

Freedman, Samuel, Philadelphia; Temple University School of Dentistry, 1917; died August 9; age 66.

Fujita, Shozoh, Berkeley, Calif.; College of Physicians and Surgeons, 1911; died December 17; age 77.

Galbraith, Robert M., Rochester, N. Y.; University of Toronto, Toronto, Canada, 1924; died January 6; age 58.

Gallerano, Pasquale C., Houston, Texas; Texas Dental College, 1925; died October 30; age 55.

Giebelhouse, Phillip H., Hicksville, N. Y.; New York College of Dentistry, 1913; died September 28; age 76.

Giles, William D., Chicago; Northwestern University Dental School, 1917; died January 15; age 66.

Glick, Oscar D., Philadelphia; Temple University School of Dentistry, 1907; died August 8; age 75.

Godburn, John L., West Haven, Conn.; Baltimore College of Dental Surgery, University of Maryland, 1919; died January 7; age 61.

Goetz, Harry A., Bronx, N. Y.; New York University College of Dentistry, 1915; died January 24; age 68.

Goldstein, Jacob W., Brooklyn; New York College of Dentistry, 1909; died December 23; age 74.

Goodall, John J., Metropolis, Ill.; Chicago College of Dental Surgery, 1911; died December 27; age 72.

Greenwald, Harry, New York; New York College of Dentistry, 1911; died January 8; age 76.

Griffin, Thomas J., Los Angeles; University of Southern California School of Dentistry, 1934; died January 13; age 56.

Grimm, Dwight L., Parkersburg, W. Va.; University of Pittsburgh School of Dentistry, 1927; died January 7; age 52.

Grissom, George E., Coldwater, Miss.; University of Tennessee College of Dentistry, 1930; died January 16; age 60.

Guercio, Michael S., Buffalo; University of Buffalo School of Dentistry, 1923; died January 22; age 60.

Guie, Edwin B., Connellsville, Pa.; University of Pittsburgh School of Dentistry, 1943; died December 31; age 42.

Hanson, Ingwald H., Manitowoc, Wis.; Marquette University Dental School, 1923; died December 17; age 60.

Harmon, Leonard J., Flushing, N. Y.; New York College of Dentistry, 1913; died January 11; age 67.

Haskell, Robert J., Washington, D. C.; Louisville College of Dentistry, 1900; died January 10; age 86.

Hastings, James M., Saratoga Springs, N. Y.; University of Pennsylvania School of Dentistry, 1898; died January 14; age 83.

Hawley, J. Alfred, Marathon Shores, Fla.; University of Michigan School of Dentistry, 1906; died December 15; age 74.

Heath, Roy W., Kalamazoo, Mich.; University of Michigan School of Dentistry, 1907; died November 22; age 74.

Hickelton, George T., Buffalo; University of Buffalo School of Dentistry, 1897; died December 24; age 84.

Himelblau, Leonard A., Pittsburgh; University of Pittsburgh School of Dentistry, 1928; died August 1; age 53.

Hine, Clyde L., Tuscola, Ill.; Indiana Dental College, 1904; died January 3; age 83.

Hodgson, Wilson J., Bronx, N. Y.; New York College of Dentistry, 1916; died January 14; age 67.

Hopkins, William D., Mount Airy, Md.; Baltimore College of Dental Surgery, University of Maryland, 1896; died December 26; age 85.

Hunt, Ray H., Portland, Ore.; North Pacific College of Oregon School of Dentistry, 1911; died January 24; age 68.

Ingram, Frank L., Pendleton, Ore.; North Pacific College of Oregon School of Dentistry, 1908; died November 26; age 74.

Jacques, Harry E., Kansas City, Mo.; Kansas City Dental College, 1919; died December 2; age 72.

Jenkins, Clarence E., East Westmoreland, N. H.; Tufts College Dental School, 1911; died January 20; age 69.

Kalloch, Lewis H., Providence, R. I.; Philadelphia Dental College, 1892; died December 26.

Karesh, Irwin, Charleston, S. C.; Atlanta-Southern Dental College, 1940; died January 13; age 44.

Katz, Louis Howard, Mamaroneck, N. Y.; New York College of Dentistry, 1920; died January 7; age 62.

Keller, Maxfield L., Shreveport, La.; Loyola University School of Dentistry, New Orleans, 1941; died January 3; age 53.

Kennedy, John D., Kansas City, Kan.; Kansas City Dental College, 1917; died December 13; age 66.

Kitt, Philip, Mount Vernon, N. Y.; New York College of Dentistry, 1915; died January 13; age 69.

Klaver, Eugene G., Detroit; University of Michigan School of Dentistry, 1918; died December 23; age 63.

Knox, Henry B., Oakland, Calif.; University of California College of Dentistry, 1901; died April 15; age 80.

Kraning, Charles F., North Manchester, Ind.; Indiana Dental College, 1898; died November 9; age 88.

Krucker, Philip A., Hamilton, Ohio; Ohio College of Dental Surgery, University of Cincinnati, 1907; died January 3; age 74.

Lapin, Samuel E., New York; New York University College of Dentistry, 1916; died January 2; age 65.

Leifer, Edward D., Washington, D. C.; Georgetown University School of Dentistry, 1921; died January 12; age 63.

Lewis, Howard F., Rochester, N. Y.; University of Buffalo School of Dentistry, 1915; died December 27; age 68.

Lienau, Rudolph C., Brooklyn; New York College of Dentistry, 1896; died November 9; age 85.

Lind, John I., New York; New York University College of Dentistry, 1930; died August 13; age 51.

Lindsay, James F., Amsterdam, N. Y.; University of Buffalo School of Dentistry, 1926; died January 19; age 54.

Looze, John B., Whitewater, Wis.; Northwestern University Dental School, 1903; died January 8; age 80.

Loveridge, Leonard E., Lancaster, Pa.; University of Pennsylvania School of Dentistry, 1917; died January 31; age 65.

Maggin, Solomon, New York; College of Dental and Oral Surgery, 1915; died January 22; age 79.

Marble, Edwin H., Ogden, Utah; Chicago College of Dental Surgery, 1916; died September 8; age 79.

Mariani, Thomas E., Baltimore; Baltimore College of Dental Surgery, University of Maryland, 1929; died October 8; age 52.

Markley, Guy E., Toledo, Ohio; University of Michigan School of Dentistry, 1911; died January 1; age 85.

Marxen, Nicholas J., Jordan, Minn.; University of Minnesota School of Dentistry, 1920; died December 29; age 60.

McCluer, William A., Lexington, Va.; Baltimore College of Dental Surgery, University of Maryland, 1928; died December 16; age 63.

Zetterstedt, Arthur, Big Rapids, Mich.; University of Michigan School of Dentistry, 1909; died October 25; age 72.

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THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION

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One-Hundredth Annual Session	September 14-18, 1959	New York
One-Hundred and First Annual Session	October 17-20, 1960	Los Angeles
One-Hundred and Second Annual Session	October 16-19, 1961	Philadelphia
One-Hundred and Third Annual Session	October 29-November 1, 1962	Miami Beach, Fla.
One-Hundred and Fourth Annual Session	October 14-17, 1963	Atlantic City, N.J.

MEETINGS OF CONSTITUENT SOCIETIES

State	*Date*	*Place*	*Secretary and Address*
Alabama			C. R. Crook, Professional Center, Montgomery
Alaska	July 13-15	Anchorage	R. D. Livie, 500 K St., Anchorage
Arizona	May 6-9	Scottsdale	W. G. Burke, 15 E. Monroe St., Phoenix
Arkansas			D. M. Hamm, Box 89, Clarksville
California			W. J. Healy, 518 Sutter St., San Francisco 8
S. California	May 4-6	Los Angeles	903 Crenshaw Blvd., Los Angeles 19
Colorado	Oct. 4-7	Colorado Springs	G. H. Siersma, 724 Republic Bldg., Denver 2
Connecticut	May 13, 14	Hartford	E. S. Arnold, 37 Linnard Rd., W. Hartford
Delaware	June 12, 13	Wilmington	E. J. Truono, 1401 Gilpin Ave., Wilmington 6
Dist. of Columbia	Mar. 13-16	Washington	J. F. Keaveny, 1835 Eye St., N.W., Washington 6
Florida	May 17-20	Hollywood	R. P. Groom, 3127 Atlantic Blvd., Jacksonville
Georgia	Oct. 25-28	Atlanta	F. M. Butler, Jr., Bankers Insurance Bldg., Macon
Hawaii	June 14-18	Honolulu	J. H. Dawe, 810 N. Vineyard St., Honolulu
Idaho	June 22-24	McCall	J. R. Olesberg, 214 Third St., Coeur d'Alene
Illinois	May 11-13	Peoria	P. W. Clopper, 632 Jefferson Bldg., Peoria
Indiana	May 18-20	Indianapolis	W. R. Shoemaker, Citizens Bank Bldg., Anderson
Iowa	May 3-6	Des Moines	H. N. Hake, 639 Insurance Exchange Bldg., Des Moines
Kansas			F. A. Richmond, Brotherhood Bldg., Kansas City 1
Kentucky			A. B. Coxwell, Jr., 2208 Dundee Rd., Louisville 5
Louisiana			J. S. Bernhard, 231 Atkins Ave., Shreveport
Maine	June 18-20	Rockland	S. M. Gower, Box 27, Skowhegan
Maryland	May 3-6	Baltimore	C. L. Inman, Jr., Medical Arts Bldg., Baltimore
Massachusetts	May 3-6	Boston	H. E. Tingley, 12 Bay State Rd., Boston 15
Michigan			F. Wertheimer, Michigan Dept. of Health, Lansing
Minnesota	Apr. 4-6	St. Paul	C. V. E. Cassel, 2236 Marshall Ave., St. Paul 4
Mississippi	June 21-24	Biloxi	B. A. Cohen, Box 9981, Jackson 27

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State	*Date*	*Place*	*Secretary and Address*
Missouri	May 10-13	Springfield	E. D. Suggett, Merchants Bank Bldg., Jefferson City
Montana	May 7-9	Kalispell	R. C. Ritter, 28 N. Black St., Bozeman
Nebraska			F. A. Pierson, Federal Securities Bldg., Lincoln
Nevada	May 10-12	Las Vegas	O. M. Seifert, 755 Ryland Ave., Reno
New Hampshire	June 21-24	Whitefield	F. E. Williams, 814 Elm St., Manchester
New Jersey	May 12-15	Atlantic City	J. G. Carr, 407 Cooper St., Camden
New Mexico	June 7-10	Santa Fe	W. A. Blueher, 24 Medical Arts Sq., N.E., Albuquerque
New York	May 10-13	Syracuse	C. A. Wilkie, 268 Ashland Pl., Brooklyn 17
North Carolina	May 3-6	Pinehurst	L. H. Butler, Jefferson Bldg., Greensboro
North Dakota	May 3-6	Grand Forks	J. H. Pfister, 419½ Dakota Ave., Wahpeton
Ohio	Oct. 25-28	Cleveland	E. G. Jones, 185 E. State St., Columbus
Oklahoma			L. D. Wright, Osler Bldg., Oklahoma City
Oregon	Mar. 7-9		T. D. Holder, Selling Bldg., Portland
Panama C. Z.			G. E. Lilly, Box 29, Ft. Clayton
Pennsylvania	May 13-16	Harrisburg	M. D. Zimmerman, 217 State St., Harrisburg
Puerto Rico	Jan. 24-27		R. Gonzalez R., Box 10-452, Caparra Heights
Rhode Island			C. A. Spacagna, 117 Broadway, Providence
South Carolina	May 24-26	Charleston	J. E. Wallace, 1506 Gregg St., Columbia
South Dakota	May 31-June 2	Rapid City	R. E. Decker, Box 308, Parker
Tennessee	May 11-14	Nashville	K. P. Ezell, 116 N. Academy, Murfreesboro
Texas	May 3-6	San Antonio	C. A. McMurray, 4707 Gaston Ave., Dallas 10
Utah	May 21-23	Salt Lake City	R. C. Dalgleish, State Capitol Bldg., Salt Lake City
Vermont	June 26-28	Manchester	E. C. Woods, 36 Washington St., Rutland
Virginia			W. T. McAfee, Colonial National Bank Bldg., Roanoke
Washington			G. D. Dore, Jr., 211 Medical Dental Bldg., Seattle 1
West Virginia	July 19-21	White Sulphur Springs	G. N. Casto, Jr., 710½ Lee St., Charleston
Wisconsin			C. J. Baumann, Jr., 606 W. Wisconsin Ave., Milwaukee
Wyoming	June 18-20	Moran	T. J. Drew, State Office Bldg., Cheyenne

MEETINGS OF STATE BOARDS OF DENTAL EXAMINERS

State	*Date*	*Place*	*Secretary and Address*
Alabama	June 21-27*‡ June 22†‡		W. L. Smith, 524 Chestnut St., Gadsden
Alaska	July 7-10*†	Anchorage	R. H. Williams, Box 2122, Juneau
Arizona	June 15‡		W. G. Biddulph, 1611 N. Second Ave., Glendale
Arkansas	June 15-19*†	Little Rock	G. Cone, 113 S. Pecan St., Osceola
California	June 22 July 27 Aug. 31	Los Angeles San Francisco San Francisco	J. F. Steen, 507 Polk St., San Francisco
Colorado	June 21-27	Denver	R. F. Gilmore, Republic Bldg., Denver 2
Connecticut	June 21-23* June 25, 26†	Boston Bridgeport	A. P. Delfini, 265 Church St., New Haven
Delaware	June 22*† June 23-25*†	Philadelphia Wilmington	J. F. Maguire, 1200 N. Van Buren St., Wilmington
Dist. of Columbia	June 1-5	Washington	W. T. Birthright, 1835 Eye St., N.W., Washington
Florida	July 5-16*‡ July 6, 7†‡		R. P. Taylor, Jr., P.O. Box 2913, Jacksonville 3
Georgia	June 1-4*†	Atlanta	W. G. Brown, Blackshear
Hawaii	Aug. 27-30*†‡		J. Y. Ing, James Campbell Bldg., Honolulu
Idaho	June 29-July 1‡		W. M. Smith, 305 Fort St., Boise
Illinois			R. L. Humphrey, 185 N. Wabash Ave., Chicago
Indiana	June 9-12*†	Indianapolis	C. A. Frech, Gary National Bank Bldg., Gary
Iowa	June 1-5*†	Iowa City	P. A. Hahn, Farmers & Merchants Bank Bldg., Burlington
Kansas	June 1-4‡		G. L. Teall, Box 71, Hiawatha

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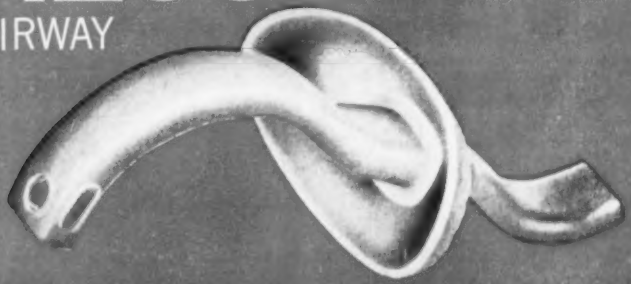

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Maine			A. S. Appleby, Box 260, Skowhegan
Maryland	June 8-10*†	Baltimore	W. D. Burton, 829 Park Ave., Baltimore 1
Massachusetts	June 1-5*‡ June 4, 5†‡		C. R. Williams, 70 Washington St., Salem
Michigan	June 7-13*†	Ann Arbor	J. L. Champagne, 3714 W. McNichols Rd., Detroit 21
Minnesota	June 15-19* June 15, 16†	Minneapolis Minneapolis	E. A. Nelson, 2236 Marshall Ave., St. Paul 4W
Mississippi	June 15-17‡		A. H. Richter, Jr., Aven Bldg., Greenwood
Missouri			R. R. Rhoades, Central Trust Bldg., Jefferson City
Montana	July 13-15*†	Helena	R. O. Betzner, 303 Power Block, Helena
Nebraska	June 8-13*‡		H. E. Weber, Stuart Bldg., Lincoln
Nevada	June 22	Reno	R. Whitehead, Box 1547, Reno
New Hampshire	June 18, 19* June 18†	Boston	S. G. Markos, 8 Renaud Ave., Dover
New Jersey	June 1, 2* June 2† June 11† June 12, 13* June 15, 16* June 16† June 24, 25* June 25†	Philadelphia Philadelphia Teaneck Trenton New York New York Philadelphia Philadelphia	C. J. Schweikhardt, 150 E. State St., Trenton
New Mexico	June 22-25	Santa Fe	G. D. Hastain, Box 1007, Clovis
New York	June 23-26* June 23, 24† [illegible] [illegible] [illegible] [illegible]	New York Albany Syracuse Buffalo Rochester	D. W. Beier, 23 S. Pearl St., Albany 7
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North Dakota	July 13-17	Fargo	G. F. Wirtz, Clinic Bldg., Mandan
Ohio	June 8-10* June 11-13* June 13† June 15, 16*† June 18-20*	Columbus Columbus Columbus Columbus Cleveland	D. E. Bowers, 322 E. State St., Columbus 15
Oklahoma	June 22-24* June 22, 24†	Oklahoma City	W. H. Stephens, Plaza Court Bldg., Oklahoma City
Oregon	June 8-11*†	Portland	F. L. Utter, Pioneer Trust Bldg., Salem
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South Carolina	June 18-20	Columbia	W. J. Brockington, 1508 Washington St., Columbia 1
South Dakota	June 21-24*†	Sioux Falls	H. T. Aker, Canton
Tennessee	June 15-19	Memphis	C. R. Aita, Bennie-Dillon Bldg., Nashville
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Utah	June 22-27‡		R. W. Fishburn, 4 Professional Center, Brigham City
Vermont	June 22-24‡		P. M. Fitch, Newport
Virginia	June 8-13* June 10, 11†	Richmond	J. M. Hughes, Medical Arts Bldg., Richmond
Washington	June 22‡		T. W. James, 1612 Hewitt Ave., Everett
West Virginia	June 22-24*†‡	West Liberty	C. C. Cottrill, Box 111, Glen Rogers
Wisconsin	June 8-12*†	Milwaukee	S. F. Donovan, Tomah
Wyoming	June 22-24	Rawlins	E. E. Edwards, Bank of Commerce Bldg., Sheridan

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American Academy of Gold Foil Operators	Sept. 10-12	New York	C. C. Latham, P.O. Box 266, Coronado 18, Calif.
American Academy of the History of Dentistry	Sept. 10	New York	M. B. Asbell, 25 Haddon Ave., Camden, N.J.
American Academy of Implant Dentures	Sept. 11-13	New York	A. N. Cranin, 2120 Ocean Ave., Brooklyn 29
American Academy of Oral Pathology	Apr. 17-19	Minneapolis	R. J. Gorlin, School of Dentistry, University of Minnesota, Minneapolis 14
American Academy of Oral Roentgenology	Sept. 12	New York	T. S. Grant, University of California Medical Center, San Francisco 22
American Academy of Pedodontics	Sept. 9-11	New York	W. E. Cody, 1325 E. 16th Ave., Denver
American Academy of Periodontology	Sept. 10-12	New York	C. E. Chamberlain, 1101 N. North St., Peoria, Ill.
American Association of Dental Editors	Sept. 12	New York	S. Epstein, 260 Santa Clara Ave., San Francisco
American Association of Dental Examiners	Sept. 11, 12	New York	C. J. Schweikhardt, 20 Durand Rd., Maplewood, N.J.
American Association of Orthodontists	May 4-7	Detroit	E. E. Shepard, 8230 Forsyth Blvd., St. Louis
American Association of Public Health Dentists	Sept. 13	New York	C. L. Howell, 1330 W. Michigan St., Indianapolis
American Board of Pedodontics	Dec. 14-17	Chicago	R. L. Ireland, College of Dentistry, University of Nebraska, Lincoln 8, Neb.
American Board of Prosthodontics	Aug. 31-Sept. 5	Chicago	C. H. Jamieson, David Whitney Bldg., Detroit 26
American College of Dentists	Sept. 11-14	New York	O. W. Brandhorst, 4236 Lindell Blvd., St. Louis
American Dental Assistants Association	Sept. 14-17	New York	M. L. Martin, First National Bank Bldg., La Porte, Ind.
American Dental Assistants Certification Board	May 13-17 Oct. 14-18		D. Perry, 6729 Gamewell Rd., Jacksonville 11, Fla.
American Dental Hygienists' Association	Sept. 14-18	New York	M. E. Swanson, 100 E. Ohio St., Chicago
American Dental Society of Anesthesiology	Sept. 12, 13	New York	H. A. Sultz, 1275 Delaware Ave., Buffalo 9
American Dental Society of Europe	July 7-10	Stockholm, Sweden	J. P. Molony, 110 Harley St., London W.1, England
American Denture Society	Sept. 11, 12	New York	V. L. Steffel, College of Dentistry, Ohio State University, Columbus, Ohio
American Society of Dentistry for Children	Sept. 11-13	New York	R. E. McDonald, School of Dentistry, Indiana University, 1121 W. Michigan St., Indianapolis
American Society of Oral Surgeons	Sept. 9-12	New York	D. C. Trexler, 840 N. Lake Shore Dr., Chicago 11
Ark-La-Tex Dental Congress	Aug. 17	Shreveport, La.	G. Poulos, State National Bank Bldg., Texarkana, Ark.
Armed Forces Reserve Dental Officers' Association	Sept. 12, 13	New York	D. Lewis, 11601 Viers Mill Rd., Wheaton, Md.
Association of American Women Dentists	Sept. 14	New York	G. Cramer, 99 W. Broadway, Salem, N.J.
Austrian Dental Congress	May 20-23	Graz, Austria	R. Traunet, Zahnklinik und Kieferstation Graz, Auenbruggerplatz 12 (Landeskrankenhaus) Austria
Berkshire Conference (Tenth)	June 14-18	Lenox, Mass.	I. Glickman, Tufts University School of Dental Medicine, 136 Harrison Ave., Boston 11
British Dental Association	May 25-29	Torquay, England	Secretary, British Dental Association, 13 Hill St., Berkeley Square, London W.1
Canadian Dental Association	June 21-24	Halifax	D. W. Gullett, 234 St. George St., Toronto 5, Canada
Chicago Dental Society	Feb. 7-10	Chicago	K. S. Richardson, 30 N. Michigan Ave., Chicago
Congress of Dental Science	May 6-10	Knokke sur-Mer, Belgium	A. G. Vermeersch, 8, Place Foch, Louvain, Belgium
Council on Dental Education, Dental Aptitude Tests	Oct. 2, 3		S. Peterson, 222 E. Superior St., Chicago 11

NO. 20

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	sec.	sec.	sec.	sec.
Upper Molars	5	2¼	½	1¼
Bicuspids	3	1¼	¼	1
Cuspids	3	1¼	¼	¾
Incisors	3	1½	¼	1
Lower Molars	3	1½	½	1
Bicuspids	2¼	1¼	½	¾
Cuspids	2¾	1¼	¼	¾
Incisors	2¼	1	¼	¾

The chart above shows basic recommended exposure technique for these films. When very short exposures are used with "LF" Film, the accuracy of the timer is specially important. Wide variations in density or inconsistent results indicate that the timer or the method of setting it should be checked by a service engineer.

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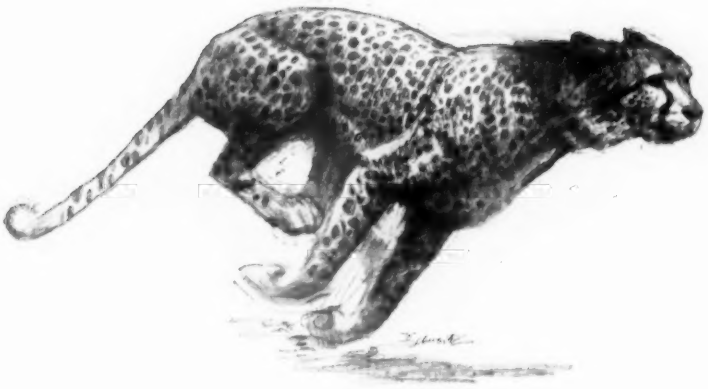
Dental Congress of Paris (Sixty-fourth)	Nov. 12-18	Paris, France	L. A. Celestin, 31, Rue Tronchet, Paris 8e, France
European Orthodontic Society, Thirty-fifth Congress	July 6-11	Marseille, France	J. Autissier, 3, Bd Paul Doumer, Marseille, France
Federation Dentaire Internationale, 47th Annual Meeting	Sept. 12-19	New York	G. H. Leatherman, 35 Devonshire Place, London W.1, England
French Congress of Stomatology (Sixteenth)	Oct. 5-10	Paris, France	R. Bataille, 43 Rue de la Chaussee d'Antin, Paris, France
German Dental Congress (Fourteenth) and 100th Anniversary Meeting, German Society of Dentistry	Sept. 3-6	Berlin	R. Braun, Universitaetstrasse 73, Koeln-Lindenthal, Germany
German Orthodontic Society	May 24-27	Frankfurt, Germany	R. Ritter, Universitaetsklinik und Poliklinik fur Mund-Zahn- und Kieferkranke, Heidelberg, Germany
German Society for Maxillo-facial Surgery, Ninth Session	July 8-10	Dusseldorf, Germany	A. Rehrmann, Westdeutsche Kieferklinik, Himmelgeisterstrasse 152, Dusseldorf, Germany
German Society of Prosthetics	May 28-30	Frankfurt, Germany	D. Jantzen, Essen, Krupp Zahnklinik, Germany
Greater Pittsburgh Meeting	Oct. 6-8	Pittsburgh	H. D. Butts, Jr., Jenkins Bldg., Pittsburgh
International Academy of Oral Dynamics	Sept. 12, 13	New York	J. T. McSweeney, 140 E. 80th St., New York
International College of Dentists	Sept. 12, 13	New York	H. O. Westerdahl, 4829 Minnetonka Blvd., Minneapolis
International Dental Show (Fourteenth)	May 27-30	Frankfurt, Germany	Verband der Deutschen Dentalindustrie e. V., Frankfurt/M., Hanauer Landstrasse 139-145
Mid-Continent Dental Congress	Nov. 1-4	St. Louis	J. E. Brophy, 8013 Maryland Ave., St. Louis 5
National Association of Seventh-Day Adventist Dentists	Sept. 11-13	New York	G. H. Curtis, Box 101, Loma Linda, Calif.
National Board of Dental Examiners	Nov. 30, Dec. 1		G. J. Casey, 222 E. Superior St., Chicago 11
National Dental Association	Aug. 16-20	Cincinnati	E. N. Jackson, P.O. Box 197, Charlottesville, Va.
New England Dental Society	Oct. 21, 22	Boston	W. F. O'Meara, 904 Main St., Hartford 3, Conn.
Northwest Academy of Dental Medicine	May 24-28	Sun Valley, Idaho	G. Underwood, Selling Bldg., Portland 5, Ore.
Paris International Dental Meeting (Thirty-third)	Nov. 23-29	Paris, France	M. J. Lang, 5, rue Raymond Losserand, Paris 14 France
Philippine Dental Association	May 13-17	Manila	D. G. Santos, P.O. Box 1142, Manila
Scandinavian Dental Association (Thirty-second Congress)	July 2-4	Copenhagen, Denmark	Secretariat, Osterbrogade 4, Copenhagen, Denmark
Southeastern Society of Oral Surgeons	May 7-9	Gatlinburg, Tenn.	P. B. Whittington, Jr., Medical Arts Bldg., Greensboro, N.C.
Southern Academy of Periodontology	June 11-13	Gatlinburg, Tenn.	J. R. Owings, 7 Medical Ct., Greenville, S.C.
Southwest Society of Periodontists	May 1, 2	San Antonio, Texas	J. H. Swindle, Jr., P.O. Box 3096 Westview Station, Waco, Texas
St. Apollonia Guild, Catholic Dentist Guild of Brooklyn, Catholic Dentist Guild of Rockville Centre	Sept. 13	New York	P. Bruel, 2 E. 69th St., New York
U.S.C. Dental Study Group of Mexico, Twelfth Annual Seminar	May 17-21	Acapulco, Mex.	C. J. Cornish, Paseo de la Reforma 510-601, Mexico 6, D.F.

SPEED



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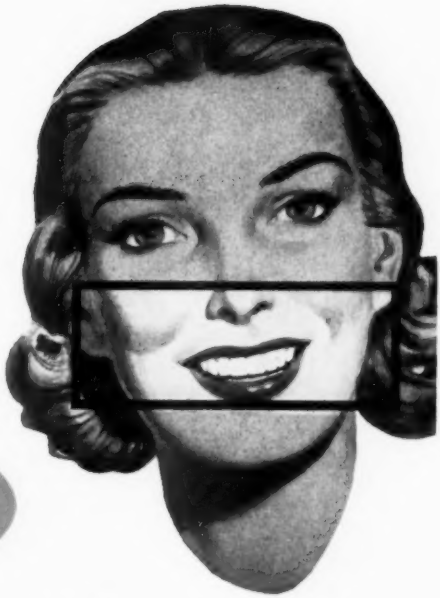

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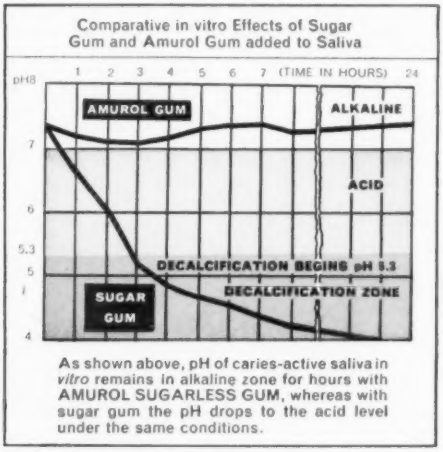

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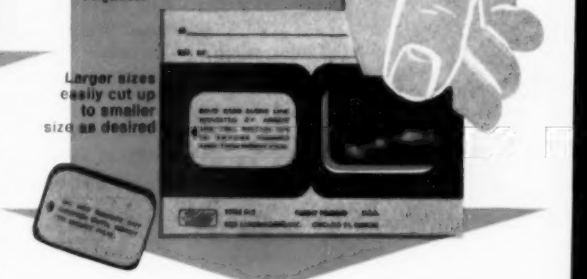

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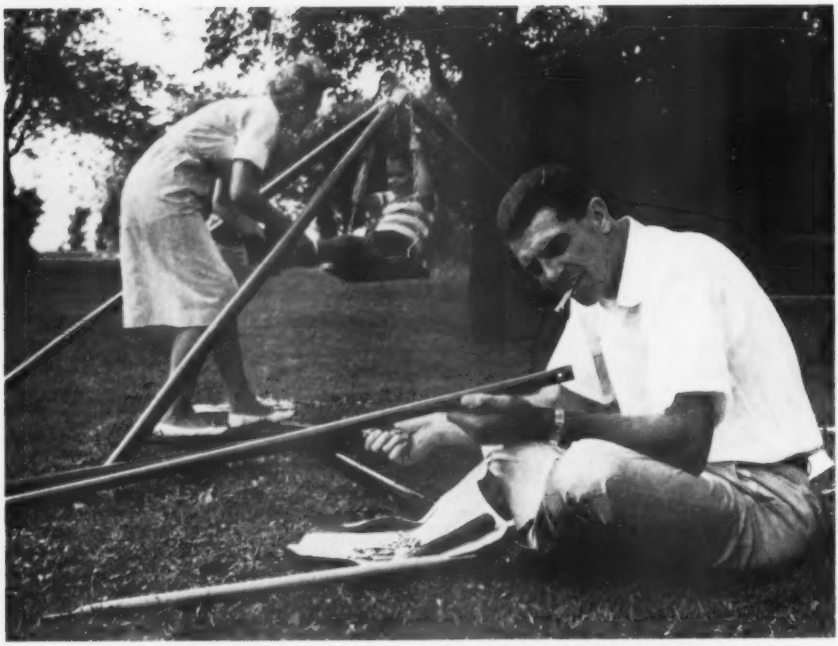

BUILDING

Food is the source of all body protein . . . the primary building material of all living cells . . . of enzymes which digest and metabolize food and synthesize new body tissue . . . of hormones which regulate growth and body functioning . . . of antibodies which protect from disease . . . even of the genes which determine the characteristics of the individual.

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¼ from milk, cheese and ice cream . . . ⅓ from the meat group . . . ¼ from vegetables and fruits . . . 1/7 from breads and cereals.

A GUIDE TO GOOD EATING — USE DAILY

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3 to 4 glasses milk—children • 4 or more glasses—teenagers • 2 or more glasses—adults • Cheese, ice cream and other milk-made foods can supply part of the milk

MEAT GROUP

2 or more servings • Meats, fish, poultry, eggs, or cheese—with dry beans, peas, nuts as alternates

VEGETABLES AND FRUITS

4 or more servings • Include dark green or yellow vegetables; citrus fruit or tomatoes

BREADS AND CEREALS

4 or more servings • Enriched or whole-grain added milk improves nutritional values

When combined in well-prepared meals, foods selected from each of these four food groups can provide adequate protein . . . while satisfying the tastes, appetites and all other nutrient needs of all members of the family . . . young and old.

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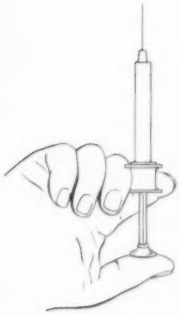

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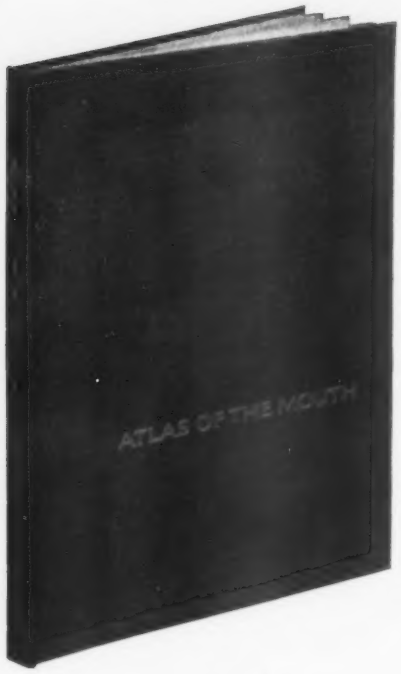

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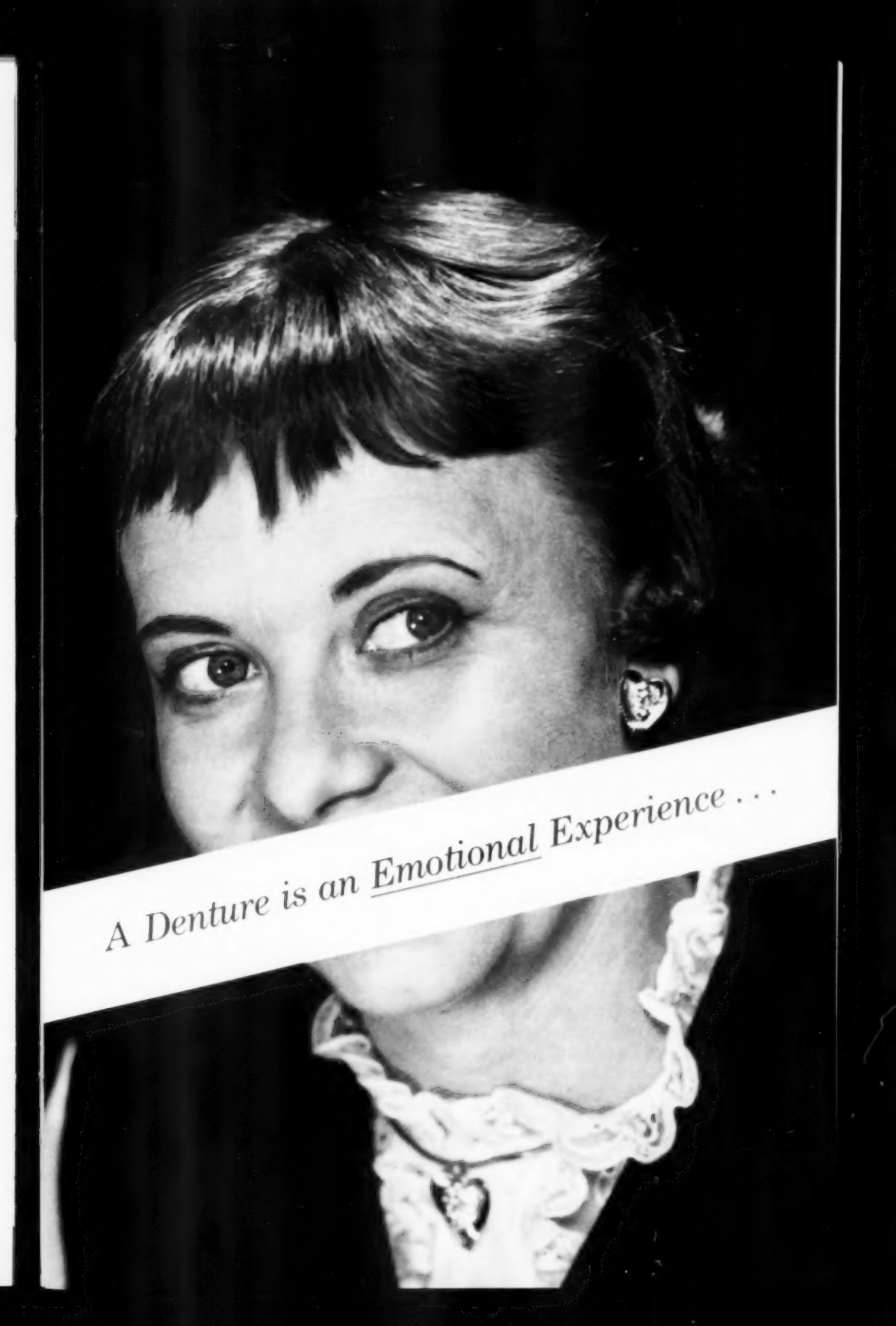
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BEFORE: *Teeth are too small for the face and are arranged in a broad, symmetrical arch.*

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The physical transformation of this patient is dramatically illustrated in these "before and after" pictures. The photo at left was taken about a year ago, when the patient wore an old-fashioned, stereotyped denture. The photo at right shows the patient with an individualized Trubyte Bioform Esthetic Denture.

The psychological change cannot be illustrated, but the "after" photo suggests how complete and satisfying this transformation has been. The natural, radiant smile, the new hair-do—these are outward manifestations *of the inner change.*

She acts young again because she *looks* and *feels* young again . . . and this is certainly not an isolated or exceptional case. Every dentist can cite at least one or two cases in which the patient has become a "new" man or woman.

AFTER: *Trubyte Bioform Mould 21F (Centrals) and 22E (Laterals and Cuspids) in Shade B62 are arranged in an asymmetrical alignment in this natural, lifelike restoration.*

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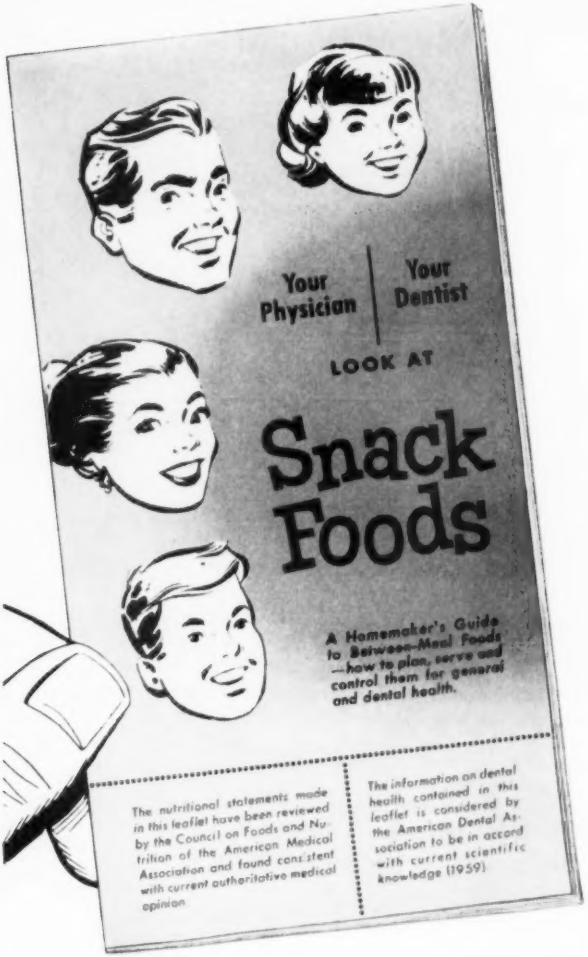
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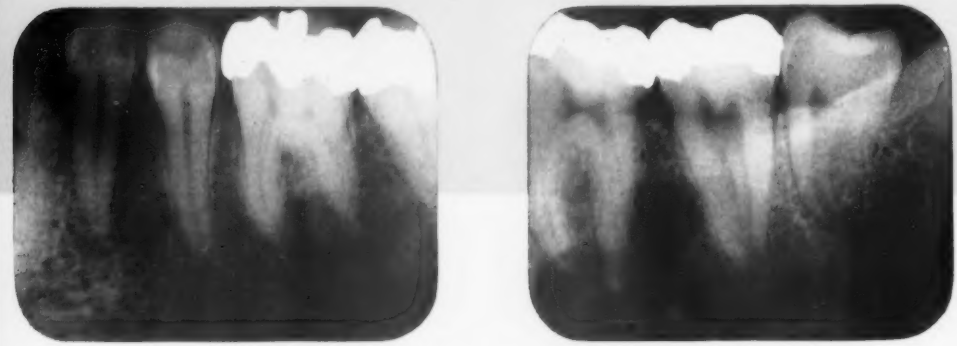

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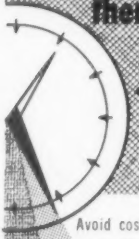

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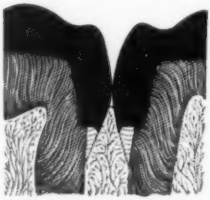
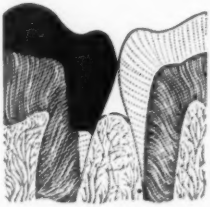


DWG. A: Contact too far to gingival

DWG. B: Contact too close to occlusal



DWG. C: Contact normal

The importance of contact areas

The drawings shown here are mesio-distal sections through portions of two biscuspids, and illustrate contact areas and form of interproximal spaces.

In drawing A the contact is too far to the gingival. This creates a wedge-shaped occlusal embrasure, into which food is packed. The force created destroys the alignment of the teeth damaging the gingival tissues.

Drawing B shows a contact too close to the occlusal. Such a contact does not provide the sluice-way effect so necessary for tissue stimulation and for self-cleansing action.

Drawing C represents the ideal point of contact forming the correct interproximal space.

(Prepared under the direction of competent dental authority.)

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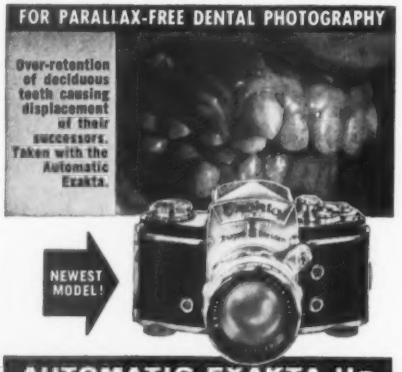
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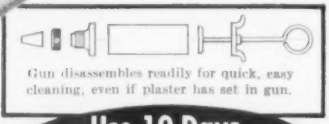

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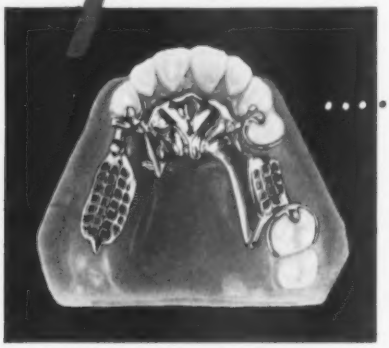

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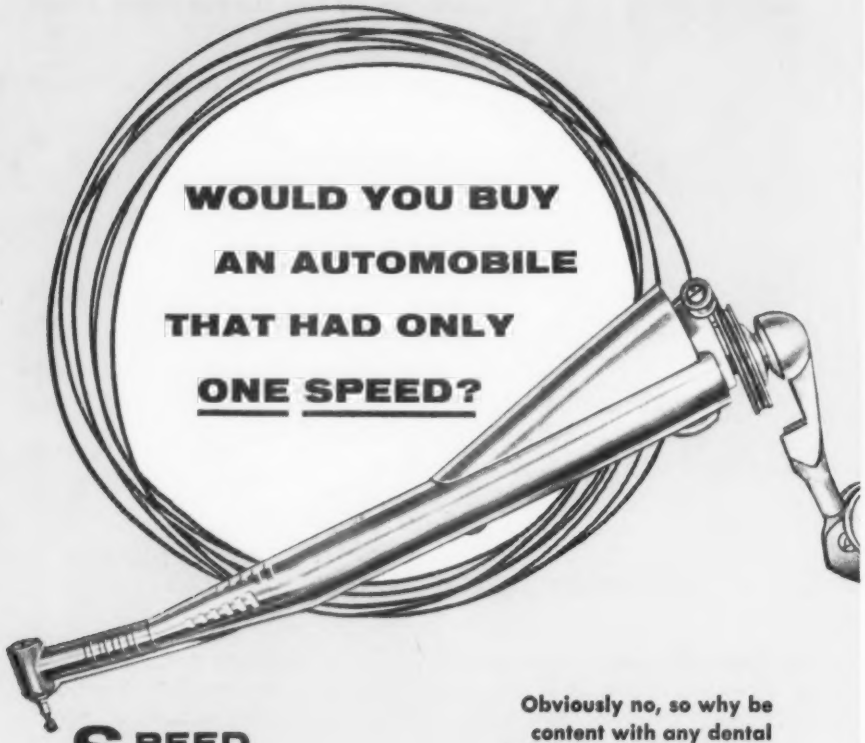

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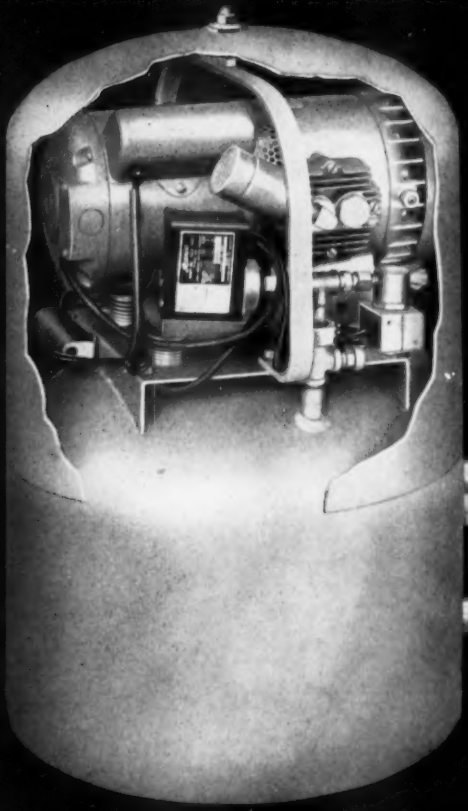

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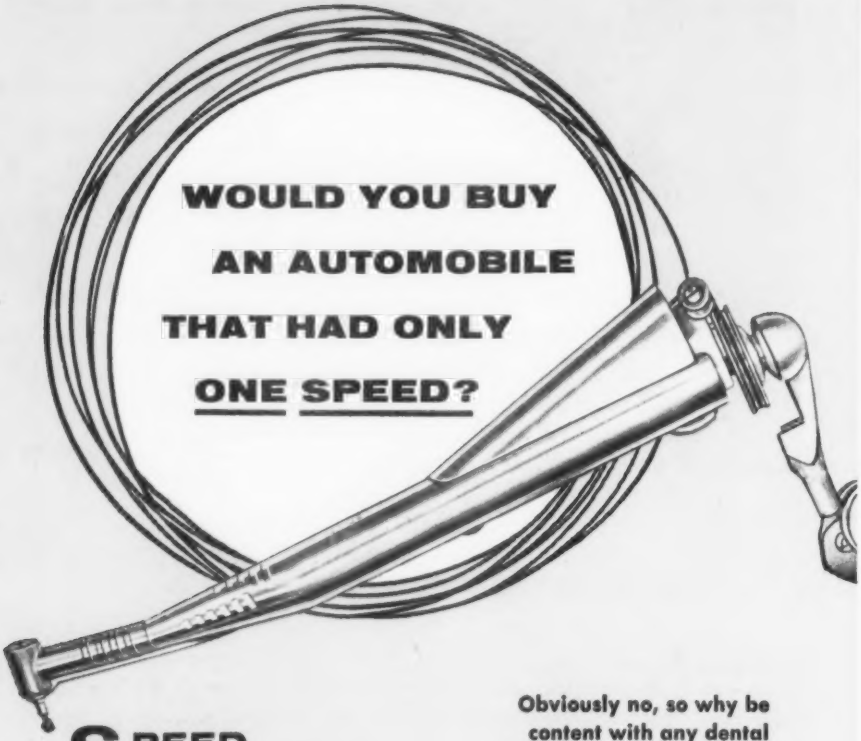

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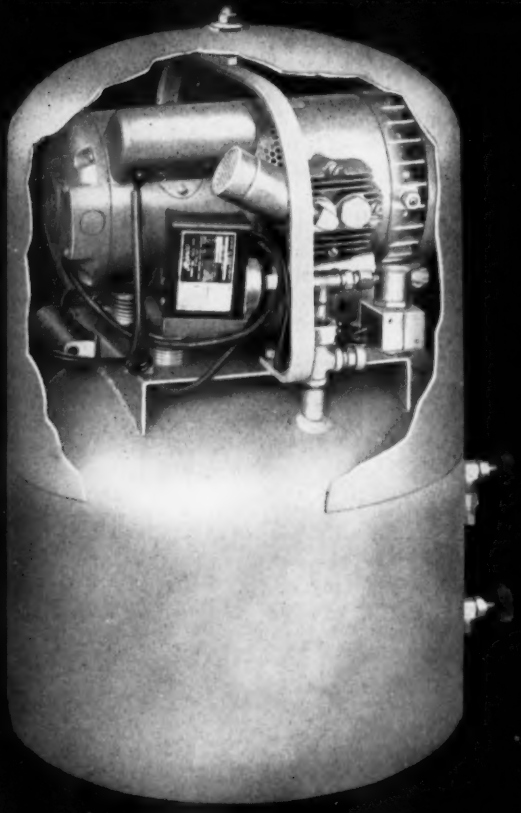

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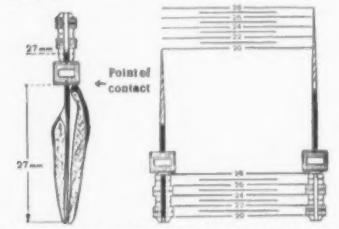

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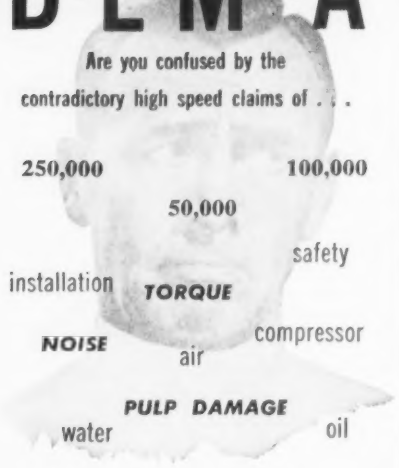

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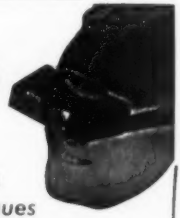

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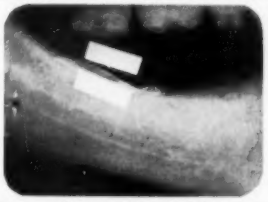

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1. Paul, W. D., Dryer, R. L., and Routh, J. I.: *Effect of Buffering Agents on Absorption of Acetylsalicylic Acid*, J. Am. Pharm. Assoc., Sc. Ed., 39:21 (Jan.) 1950.

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